No.

People's Republic of Bangladesh
Dhaka City Corporation

Project for Strengthening of Solid Waste Management in Dhaka City

People's Republic of Bangladesh

Project Completion Report

March 2011

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

YACHIYO ENGINEERING CO., LTD.
ORIENTAL CONSULTANTS CO., LTD.

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People's Republic of Bangladesh
Dhaka City Corporation

Project for Strengthening of Solid Waste Management in Dhaka City

People's Republic of Bangladesh

Project Completion Report

Project Team

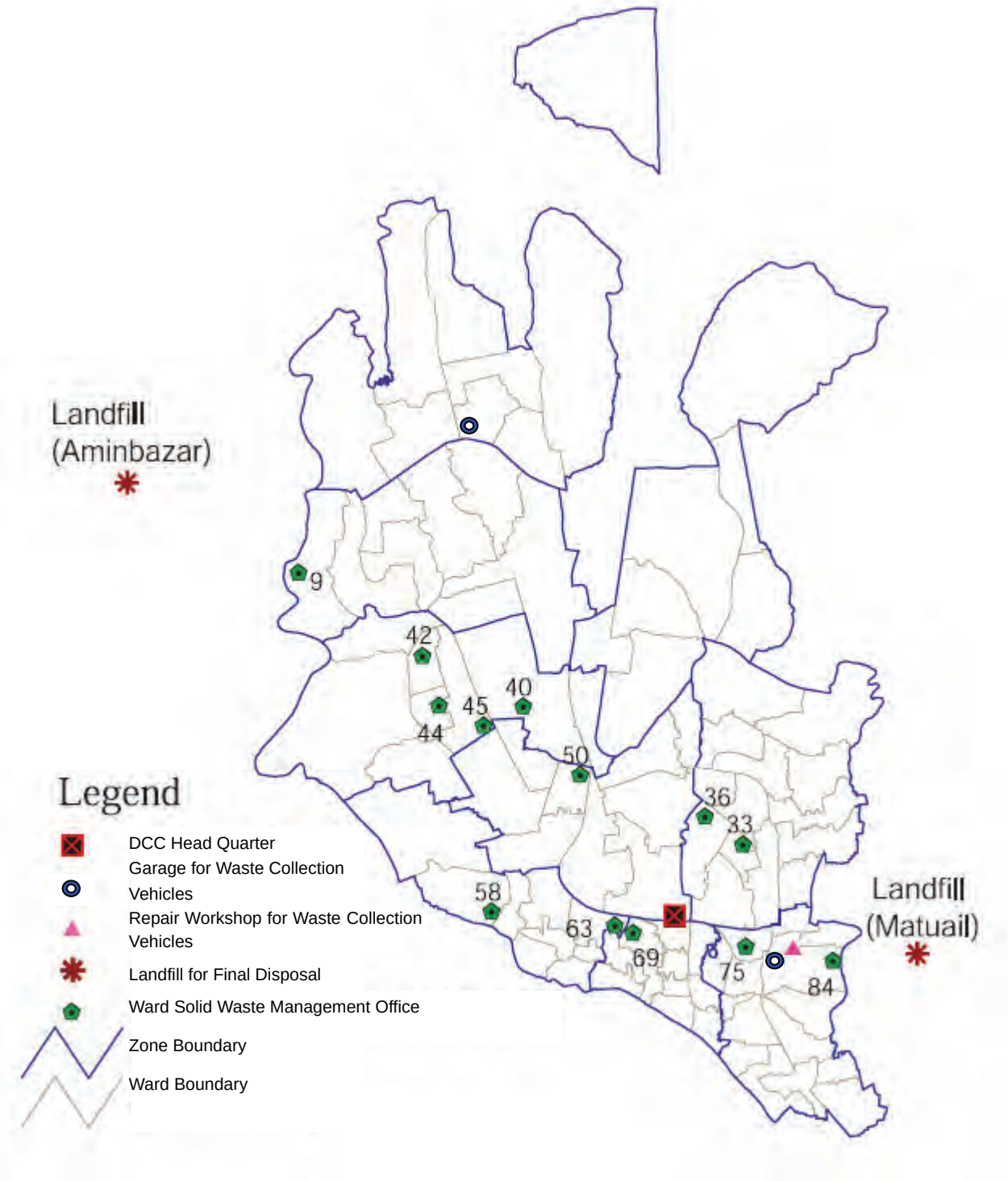
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Map of Dhaka City and Facilities for Solid Waste Management

Project Completion Report
of
Project for Strengthening of Solid Waste Management in Dhaka City

MAIN REPORT

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Abbreviations

AAP	Annual Activity Plan
BUET	Bangladesh University of Engineering and Technology
CAP	Community Action Plan
CBO	Community-based Organization
CCO	Chief Conservancy Officer
CD	Capacity Development
CEO	Chief Executive Officer
CI	Conservancy Inspector
CO	Conservancy Officer
CSI	Conservancy Supervising Inspector
CTG	Collection and Transportation Group
CUWG	Community Unit Working Group
CWMO	Chief Waste Management Officer
C/P	Counterpart
DCC	Dhaka City Corporation
DOE	Department of Environment
ECNEC	Executive Committee of National Economic Council
EIA	Environmental Impact Assessment
FMG	Financial Management Group
FY	(Bangladeshi) Financial Year
HH	Household
JFY	Fiscal Year of Japan
JICA	Japan International Cooperation Agency
JDCF	Japan Debt Cancellation Fund
JET	JICA Expert Team
JOCV	Japan Overseas Cooperation Volunteer
LFG	Landfill Gas
LMU	Landfill Management Unit
MoEF	Ministry of Environment and Forests
MoLGRD&C	Ministry of Local Government, Rural Development and Cooperatives
M/P	Master Plan
NGO	Non Governmental Organization
Off-JT	Off-The-Job Training
OJT	On-The-Job Training
OVI	Objectively Verifiable Indicator
O&M	Operation and Maintenance
PD	Project Director
PDM	Project Design Matrix

PCSP	Primary Collection Service Provider
PR	Public Relations
PRA	Participatory Rural Appraisal
RV	Rickshaw Van
SE	Superintending Engineer
SSC	Safety and Sanitation Committee
SWM	Solid Waste Management
TOT	Training of Trainers
WBA	Ward-Based Approach
WMD	Waste Management Department
WOOA	Ward Offices Owners Association

Chapter 1 Introduction

1.1 Composition of the Report

This Project Completion Report describes all achievements and outcomes of the Project for Strengthening of Solid Waste Management (SWM) in Dhaka City and is comprised of the following seven chapters and the Appendix.

Chapter 1 shows composition of this report, background of the Project with history of technical cooperation and physical assistance by the Government of Japan, Project Framework, such as development of Project Design Matrixes, an important approach, i.e., Ward-based Approach (WBA), that this Project has taken, Development Waste Management Department (WMD) Directives and Organization for Project implementation.

Chapter 2 describes achievement of the Project Purpose by showing how indicators for the Project Purpose have been reached to the expected level.

Chapter 3 lists achievement of the Outputs also by showing how indicators of the five outputs are satisfied.

Chapter 4 describes records how 25 activities of the Project have been implemented, showing good practices for successful implementation of the activities, problems/constraints that have hindered the implementation, and measures taken to overcome the problems/constraints.

Chapter 5 lists eight good practices selected by the Project Team with descriptions on approach (innovativeness), challenges, sustainability and replicability to other cities.

Chapter 6 compiles recommendations to Dhaka City Corporation (DCC), the Central Government and other relevant organizations for future solid waste management in Dhaka City.

Chapter 7 summarizes lessons leaned through the implementation of the Project for other Project, mainly for other technical cooperation projects.

1.2 Background of the Project

In Bangladesh, with annual urban population growth rate of 5.6%, urbanized areas are rapidly expanding, which is imposing urgent challenges such as solid waste management (SWM), air pollution, and proliferation of slums. The capital city of Bangladesh, Dhaka, comprising over 12 million inhabitants in its metropolitan area, faces a huge social challenge of SWM due to its population and economic growth.

Although Dhaka City Corporation (DCC) is in charge of SWM of the City, adequate ways of SWM were not operated due to weak institutional capacity and lack of planning, equipment, awareness of residents on sanitation. For sound development in Dhaka City and safe urban life of the citizen, an appropriate SWM is necessary. Having this recognition as background, the Government of Bangladesh requested to the Government of Japan for a study and formulation of a master plan on SWM in 2002. Upon the request, Japan International Cooperation Agency (JICA) conducted a development study from November 2003 to March 2006 and Clean Dhaka Master Plan (M/P) with a target year of 2015 was formulated in March 2005. The M/P proposed four priority programs as listed below that should be implemented urgently.

A) Promotion of community participation in SWM

B) Enhancement of capacity for waste collection and transport

C) Improvement in final disposal

D) Improvement in administration and management

After formulation of the M/P, JCA continued support for DCC to prepare implementation of the four priority programs in one year, from April 2005 to March 2006, in the development study. After the development study, DCC actively promoted in its own ways to implement the proposals in the M/P. However, there were problems in technical, institutional and management aspects as DCC officers had not enough capacity and experiences for planning and implementing despite their willingness to

implement the programs.

Besides, after the end of development study, JICA conducted follow-up support in technical aspects for improvement and expansion of existing landfill site in July and December 2006. In July 2006, JICA dispatched two Japan Overseas Cooperation Volunteers (JOCV) to DCC for environmental education to promote community participation in SWM. Moreover, a project of Grass-root Grant Aid of the Government of Japan was granted to local NGO that worked for collection, treatment and disposal of medical wastes in cooperation with DCC.

DCC recognized necessity for more support to acquire the capacity and skills for solving problems by DCC officers for implementation of the M/P steadily step by step, and decided to request, through the Government of Bangladesh, a technical cooperation to the Government of Japan. Based on the request, this Project has been implemented for four years since February 2007.

In parallel with technical cooperation, the Government of Japan has supported for physical infrastructure development for SWM. With Japan Debt cancellation Fund (JDCF), facilities of existing Matuail Landfill was improved to sanitary landfill (completed in 2008). Landfill facilities for Improvement Extension at Matuail Landfill were constructed (completed in June 2008) and landfill facilities for new Amin Bazar Landfill has been constructed (to be completed in June 2011) with JDCF. Further, in 2010, a Environmental Grant Aid Program, named Programme for Improvement of Solid Waste Management in Dhaka City toward the Low Carbon Society in the People's Republic of Bangladesh, which provided 100 waste collection vehicles and constructed a workshop for maintenance and repair of waste collection vehicles, has also been implemented toward realizing Clean Dhaka (refer to Figure 1.2-1.

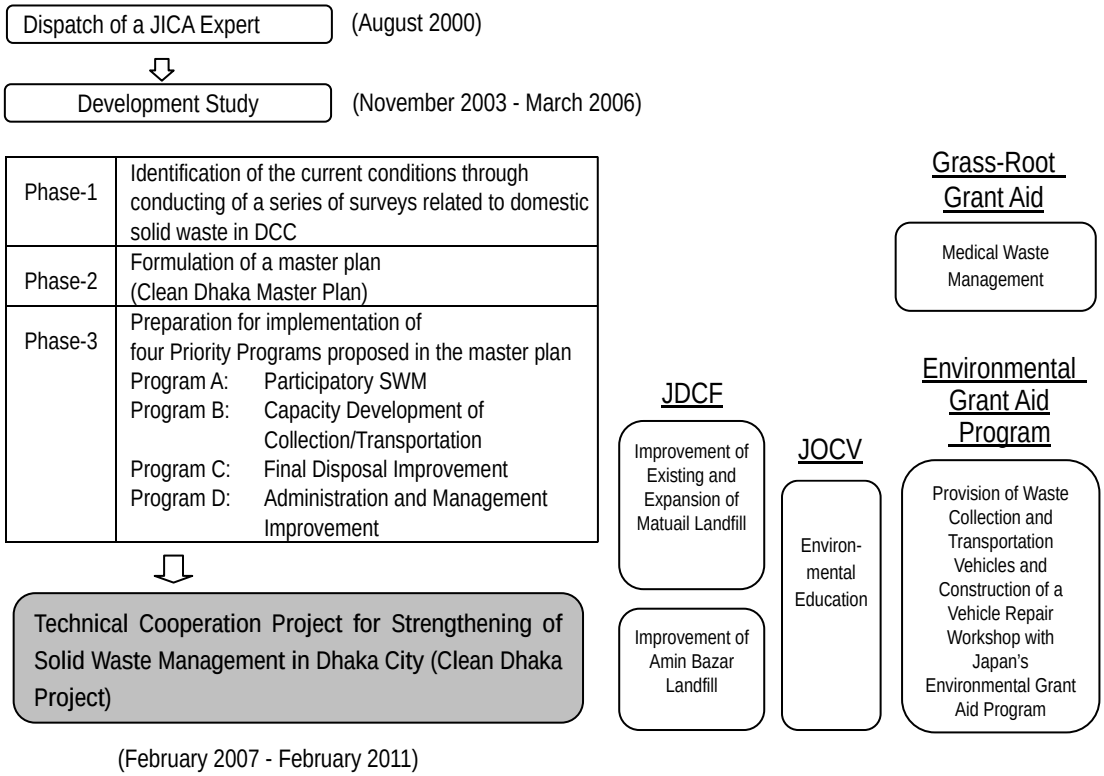


Figure 1.2-1 Background of the Project

1.3 Project Framework

(1) Goal, Project Purpose, Outputs and Activities

The Overall Goal, Project Purpose, Outputs and Activities defined in the Project Design Matrix are illustrated in Figure 1.3-1.

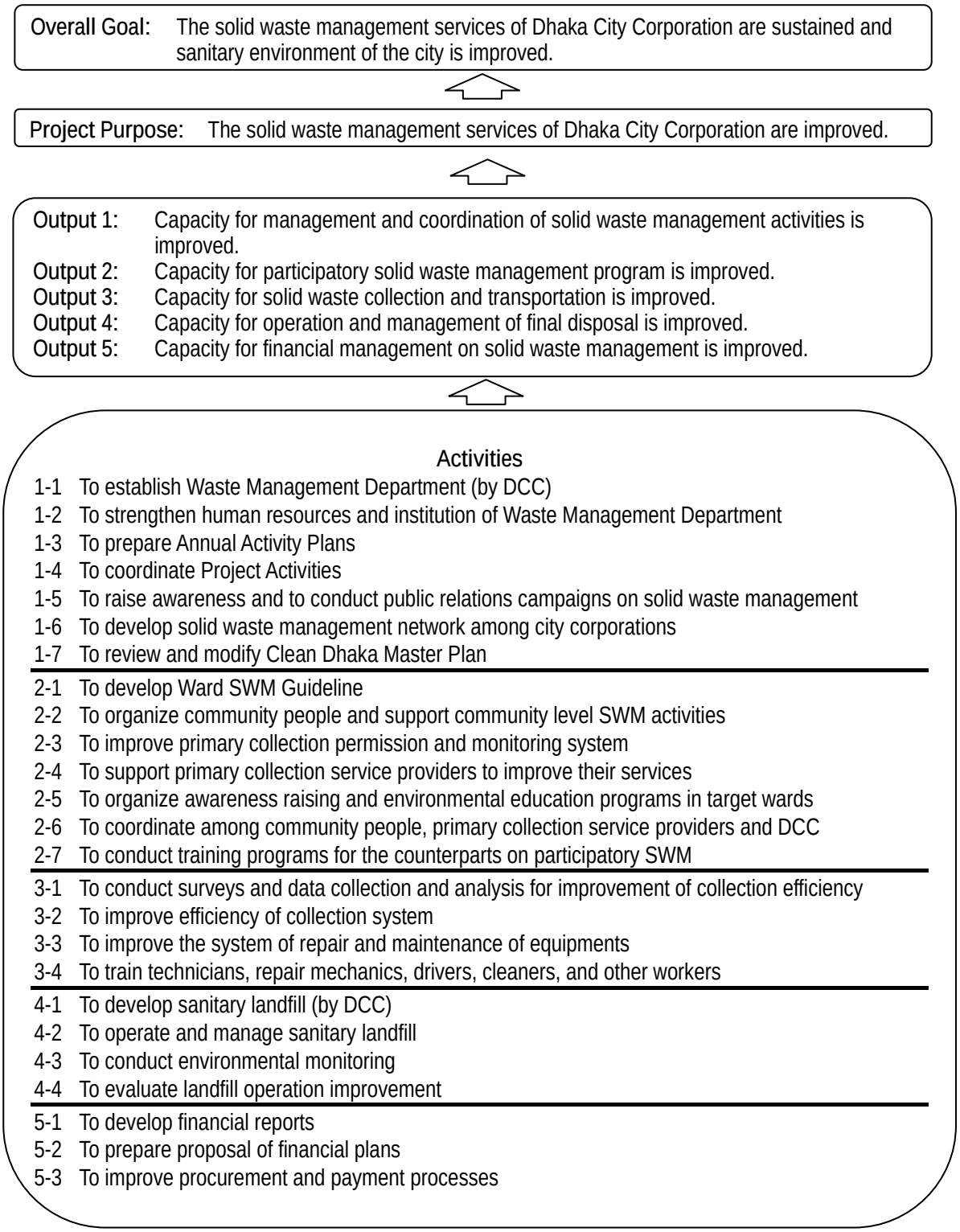


Figure 1.3-1 Goal, Project Purpose, Outputs and Activities of the Project

(2) Project Design Matrix

Framework of the Project is stated as a PDM (refer to the Appendix-1). The current PDM is version 3 and development of the PDM is shown Table 1.3-1.

Table 1.3-1 Development of PDM

Version	Date of Preparation	Group for Preparation	Contents of Revision/Remarks
0	October 2006	JICA Preparatory Study Team, DCC Counterpart (C/P)	* JICA Preparatory Study Team and DCC C/P held workshop for Problem Analysis and Objective Analysis and PDM was complied with the results of the workshop. * Some figures in Objectively Verifiable Indicators (OVI) for Outputs were remained as blank for further baseline surveys and discussions.
1	April 2007	JET, DCC C/P	* For better understanding on Project Cycle Management PCM and PDM, JET and DCC C/P held a three-day work. * In the workshop, results of Problem and Objectives Analyses by JICA Preparatory Study Team/DCC C/P were reviewed without significant modifications. * Activities were revised through checking necessity to attain Outputs, and some Activities were modified and added. * Figures of OVI for Outputs were fulfilled and some OVIs were modified and added.
2	February 2008	JET, DCC C/P, JICA Advisory Committee	* Outputs were revised as capacity development is the main target of the Project. * Activities were simplified for more flexible implementation, especially for activities implemented in several areas. * Important Assumptions were thoroughly checked and some were added.
3	March 2010	JET, DCC C/P, JICA Advisory Committee	* Some OVIs were revised based on the current situation of the Project.

(3) Application of Ward Based Approach (WBA)

WBA have been developed as the most important component of the Project to realize participatory, safe/sanitary and efficient SWM in each of DCC wards. The original idea of WBA even appeared in the Inception Report of the Project as one of the key technical policy, which aims at synergism of related activities by synchronized intensive resource inputs to focal areas, as shown below.

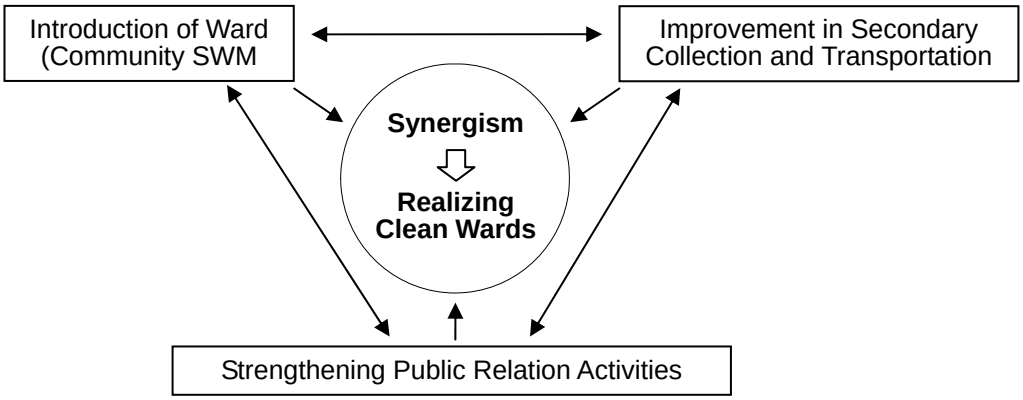


Figure 1.3-2 Approach of Intensive Resources Inputs to Focal Areas for Synchronising Components Proposed in the Inception Report of the Project

In the 2nd JFY, the Project Team discussed how to embody the policy and proposed pilot projects for Wards 36 and 76 with the same components of WBA. As JICA Bangladesh Office agreed with the proposal immediately the pilot projects started within the same year. At the end of the pilot projects, they were evaluated and the Project Team decided to continue the pilot projects not as "pilot" but as the core activities of the Project.

WBA has been applied with a mixture of the following reasons, whose details are described in Section 4.1

of this report.

1) As proposed in M/P, improvement of SWM requires an approach which can cover all aspects of i) Promotion Participatory SWM, ii) Capacity Enhancement for Collection/Transportation, iii) Final Disposal Improvement according to the waste flow as well as iv) Administration and Management Improvement, activities for the five Outputs should be closely linked each other.
2) To improve SWM of a mega city like Dhaka City with limited resources, it would be wise not to scatter the resources but intensify them in focal areas to improve SWM of the area in a comprehensive way. With the experience and lessons learned in some areas, the approach can be implemented in other areas.
3) As a ward is the smallest and basic administrative unit of Dhaka City, WBA helps SMM improvement from the bottom.
4) With intensive resource inputs, WBA allows for DCC C/P personnel, especially for CIs, who are in charge of SWM of their respective wards, to learn by actually doing.

(4) Development of WMD Directives

The word "directives" generally means order or guide from the authority. However, WMD Directives in this Project were developed not as instructions from CWMO but as consensus on common directions of SWM activities to be shared by staff of WMD through series of discussions among all members of DCC C/P and JET, including Project Manager, Chief Conservancy Officer at that time. After the consensus was built on the articles listed below, the Project Manager issued these as WMD Directives.

Though Clean Dhaka Master Plan was formulated and this Project started to support DCC for implementation of the M/P, many of DCC C/P personnel, especially those who started SWM activities at the beginning of the Project, did not know what to do from the heart. Though the M/P shows required programs/projects to achieve the M/P goal and priority programs/projects for urgent implementation, DCC C/P and JET members had recognized a necessity for common understanding or consensus to be shared among the Project Team members for implementation of the priority programs/projects.

At the beginning, Collection and Transport Group (CTG), which deals with the most complicated aspect of SWM as it lies in the middle of the waste flow, started discussions how to implement their activities. The circle of the discussions spread over Project Team members and we felt the keen necessity to share concepts/ideas/policies as implementer or supporter of SWM. After series of discussions over the Project Team members, the followings were developed as directives of WMD. The Directive is presented in the WMD inauguration event and kept in mind of the Project Team members as backbone for better SMW.

1) Efficient Linkage among the Activities of Public Participation, Primary Collection and Secondary Collection
2) Training on Effective and Safe Working Condition of Cleansing Workers
3) Strengthening of Zone and Ward Offices for Street Sweeping, Drain Cleaning, Waste Collection and Transportation
4) Improvement of Collection and Transportation Vehicle Operation System Including Allocation and Dispatch
5) Rationalization of Waste Discharge Hours and Collection and Transport Hours
6) Improvement of Maintenance System of Collection and Transportation Vehicles and Heavy Equipments
7) Guidance for Receiving Hauled Wastes at the Landfill
8) Abolishment of Dustbins
9) Improvement of Containers Design and Provision of Sufficient Number
10) Promotion of Community-Based Solid Waste Management
11) Handling of Industrial, Commercial and Institutional Waste
12) Development of Public Awareness
13) Necessity of Annual SWM Plan and Annuals SWM Activities Report

14) Sustainable Operation of the Sanitary Landfill
15) Developing Activities for 3Rs and Reduction of Green House Gas
16) Promotion Networks of Stakeholders
17) Improvement of Financial Management
18) Stringent Monitoring of Privatized Secondary Waste Collection

(5) Target Area and Target Wastes of the Project

As this technical cooperation project were designed for capacity development for master plan implementation, the target area and the target wastes are same as those set in the Clean Dhaka Master Plan as shown below:

Target area: The target area extends to all jurisdiction of DCC, comprising of ten Zones and 90 Wards. Although in 2008, the Ministry of Local Government, Rural Development and Cooperatives announced through a gazette two additional Wards in Kamrangir Char Thana these 2 wards were not covered with the Project. Though Matuail and Amin Bazar Landfill Sites are located outside the jurisdiction of DCC, those sites are also included in the target area.

Target wastes: Municipal wastes, including domestic, commercial and institutional wastes in DCC jurisdiction are target wastes of the Project. To say strictly in legislation of Bangladesh, wastes are not clearly classified. Environmental legislation obliged some industries and activities to manage solid wastes generated from their activities according to Environmental Management Plans that have to be prepared by the entities for the industries and activities at the time of environmental clearance, whose system seems not properly working. Sometimes hazardous or infectious wastes may be infused into general waste and DCC has to actually manage those wastes. Besides DCC has supported a non-governmental organization (NGO) for collection, treatment and disposal of infectious wastes from medical institutes, proper hazardous waste treatment is beyond capacity of DCC. Same as in the master plan, the target wastes in the Project include only general wastes that do not require specific collection, treatment and disposal for proper management.

(6) Organization for Project Implementation

Overall Project implementation organization is illustrated in Figure 1.3-2. The Project has been implemented by a Project Team, which consists of DCC and JICA Expert Team under supervision of Steering Committee (St/C). The Project Team has been composed of five groups corresponding to the five Outputs defined in the PDM.

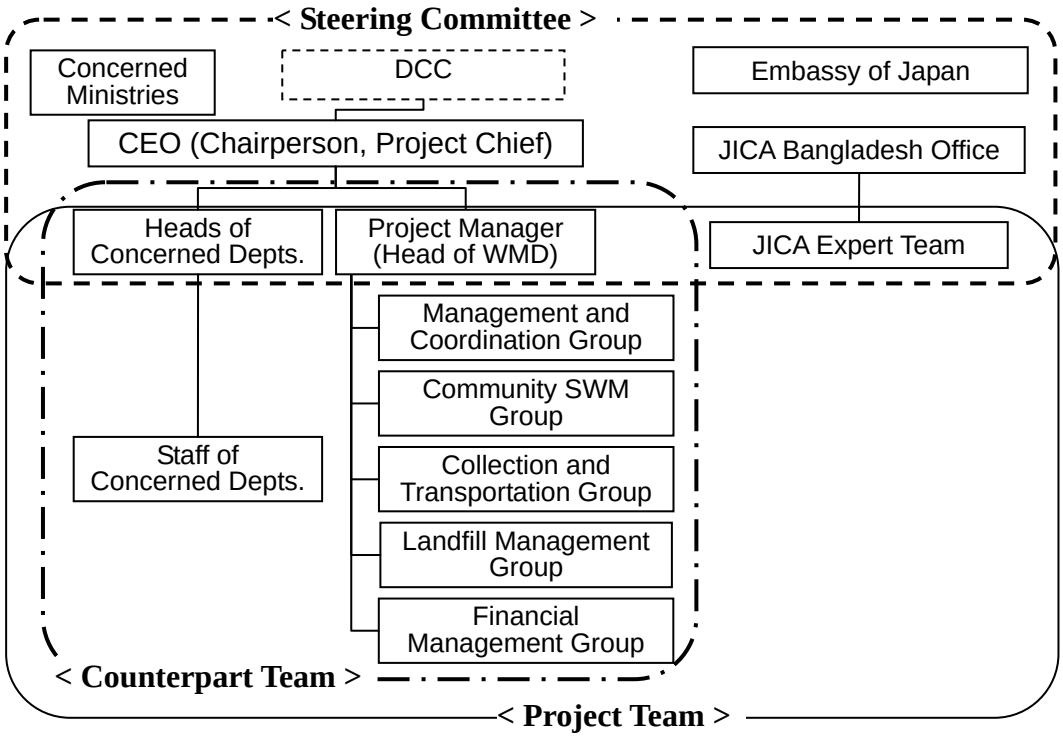


Figure 1.3-3 Organization for Project Implementation

To implement appropriate SWM, the five groups, namely, i) Management and Coordination Group, which is in charge of overall management of the Project, ii) Community SWM Group, which promotes participation of community as waste generator and supervise Primary Collection Service Providers (PCSP) that carries wastes from generation points to DCC collection points, iii) Collection and Transport Group, which collects wastes at DCC collection points and transports to landfill sites, iv) Landfill Management Group, which operates and manages DCC landfills, and v) Financial Management Group, which is in charge of financial management of SWM, have to cooperate and collaborate with each other. One of the intensions for application of WBA and development of WMD Directives is to enhance the cooperation and collaboration among the five groups before the establishment of WMD and among sections of WMD after its establishment.

Before the start of the development study of JICA, jobs for SWM were scattered in several departments of DCC. Conservancy Department was engaged in cleaning of public streets and drains (control of PCSPs started at the time of the development study by Conservancy Department), Transport Departments transported wastes from DCC collection points to the landfill sites, Mechanical Circle of Engineering Department managed heavy equipment and its operators, and procured/repaired waste collection vehicles, and no department were in charge of financial management for SWM and DCC did not know how much it spent for SWM. Though the jobs done by respective departments were closely related, coordination among the departments were insufficient and fundamental problems occurred generally. Deployment of waste collection vehicles did not correspond to and final disposal was not managed properly. As these two departments were also engaged in other jobs than SWM, sometimes SWM jobs were postponed and budget and human resource allocation were uncoordinated. To cope with these problems, establishment of WMD was proposed in M/P.

Establishment of SWM organization started at the time of preparatory study for the development study. In the discussion with the preparatory study team, DCC stated that it intended to organize Solid Waste Management Cell in Conservancy Department and the development study was implemented with the Cell and JICA study team. During the development study, Waste Management Division was planned to enhance the Cell. However, the Division was not approved by the central government and staffs of the Division were deputed from other department as additional charges and fundamental problems mentioned above were not solved. Besides, Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C) instructed overall reform of DCC organization. DCC had started the preparation, such as that for application documents to the central government. Preparation for establishment of WMD

started as a part of preparation of the overall reform and JICA study joined the preparation for WMD the establishment. As main target of the establishment were set to concentrate SWM jobs in one department with a single chain of commands, and to invite engineers to WMD, proposed organization the central government took a different shape than that proposed in the M/P.

As a result of discussions between DCC and JIBA preparatory study team for the Project in June 2006, "approval of WMD by the Government" was set as precondition for the start of this Project and this Project was designed for capacity development of WMD. However, DCC had not experienced in organizational reform for more than 20 years and DCC itself did not know how to prepare the reform. Some departments had not kept organizational records of the department. By February 2007 when the Project started, DCC had not submitted the application documents to the central government.

In April 2007, a series of discussions was held among DCC, JICA Advisory Committee and JET regarding whether Project activities are to be suspended until the precondition is satisfied or the Project Team should commence the activities from July as planned. It was decided after the discussions that Project activities should start with the conditions that DCC make utmost efforts to get approval and to establish WMD, that it allocate enough number of full-time and part-time counterpart personnel, and that DCC provide arrangements for part-time C/P personnel to easily participate to Project activities.

Although Project activities started as planned since July 2007 and pilot projects for WBA were implemented since December, DCC's arrangements for the smooth Project implementation were not enough. JICA issued a caution that Project activities might be suspended unless DCC improves the arrangements. Corresponding to the caution, DCC issued an order to deploy its staff to WMD as full-time. Project activities for the 3rd JFY started as planned.

Table 1.3-2 Office Order of DCC to Deploy Staff to WMD as Full-time

Following officers/staffs of DCC are deployed as full time in Waste Management Department that has been recommended by Ministry of Establishment.

No.	Name/ Present Post	Designated WMD Post recommended by Ministry of establishment
1	Com. Maksudur Rahman Chowdhury, Chief Conservancy Officer, Conservancy Department	Chief Waste Manager Officer
2	Dewan Md. Shah Alam , DCCO, Conservancy Department	Additional Chief Waste Management Officer (In charge)
3	Abul Hasnat Md. Ashraful Alam , Engineering Department, Mechanical -1	Executive Engineer (Mechanical, Collection & Transport) (In charge)
	M A Kuddus , ACCO, Conservancy Department	Deputy Chief Waste Management (Circle 1) (In charge)
5	Abul Hossain Chowdhury ,ACCO, Conservancy Department.	Deputy Chief Waste Management (Circle 2) (In charge)
6	Md. Mahabub Alam , Asst. Manger, Bus Terminal	Assistant Engineer (Mechanical)
7	Maksud Alam, Asst. Manager, Bus Terminal	Assistant Engineer (Mechanical)
8	A H M Abdulla Harun, SAE, Environmental Circle	Assistant Engineer (Disposal - 1) (In charge)
9	Farid Islam, SAE, Environmental Circle	Assistant Engineer (Disposal - 1)(In charge)
10	Ms. Afsana, RO, Slum Development Dept.	Asst Chief Waste Management Officer (Community)
11	Md. Asaduzzman, CSI, Z-9, Gulshan	Asst. Chief Waste Management Officer (Planning) (In charge)
12	Md. Shafiqul Islam, CI, Conservancy Department	Waste Management Officer (Community) (In charge)
13	Md. Mizanur Rahman, Auditor, Auditing Department	Waste Management Office(Budget) (In charge)

In April 2008, DCC submitted application documents for WMD separately from those for the overall reform, and finally in August, the central government approved WMD. However, after the approval it took five months to obtain an agreement on salaries of WMD posts and another four months to get an

order to establish WMD from MoLGRD&C. Full-dress preparation for staffing to WMD has started since June 2009. Activities by DCC to establish WMD and staffing to WMD are described Section 4.1 of this report.

As shown in Figure 1.3-4, there are 441 posts in WMD organogram. Out of those posts, 321 posts are to be staffed by absorption of Conservancy Department and the fleet of waste vehicles including heavy vehicle drivers or staff transfer from Engineering Department and Transports Department, etc. Remaining 120 posts are to be fulfilled with fresh recruitment.

The most important thing for the Project or future SWM by DCC is to staff with C/P personnel who has significantly developed their capacity through implementing the development study and this Project. JET has repeatedly told this to DCC top managers, such as the Mayor, CEO and CWMO. As there might be conflicts among related department, staff transfer has not proceeded except those by absorption of Conservancy Department.

For the fresh recruitment for 120, two type of preparation has to be done immediately. The one is to prepare draft recruitment rules, i.e., qualification for applicants, such as educational and job careers, and age to be determined by the central government for 61 posts that do not exist now, such as Assistant CWMO. The other is to get clearance for 59 posts that already exist in DCC or any other governmental organization, whose recruitment rules are already approved by the central government. For the former, as Administration Department is unfamiliar to the preparation, DCC has not yet prepared the drafts and submit them to MoLGRD&C. For the latter, DCC has to get the clearance from MoLGRD&C, but not yet has had it at the moment despite CEO's inquiry to MoLGRD&C. After getting the clearance from MoLGRD&C, it might take at least four months for DCC to complete the recruitment process of newspaper advertisement, checking application documents and interview tests with applicants.

It was supposed that after staffing to WMD, i) Management and Coordination Group can be replaced with CWMO, Superintending Engineer (SE), Additional CWMO, their staff, Executive Engineers (EEs) (Collection/Transport and Disposal) and Deputy CWMO (Circle 1 and 2), ii) Community SWM Group with Additional CWMO, Assistant CWMOs (Community and ten Zones), and experienced Conservancy Officers (COs) and Conservancy Inspectors (CIs), iii) Collection and Transport Group with EE (Collection and Transport), Assistant Engineers (AEs) (Waste Vehicles/Equipment and Operation/Maintenance) and their subordinates, iv) Landfill Management Group with EE (Collection and Transport), Assistant Engineers (Disposal 1 and 2) and their subordinates, v) Financial Management Group with the same personnel as Management and Coordination Group.

However, as staffing to WMD has yet to be completed, JET has to support DCC C/P groups that still include some persons who still belong to other departments though main members consist of those assigned as full-time in June 2008 until end of the Project. C/P list for each JFY is attached in Appendix of this report.

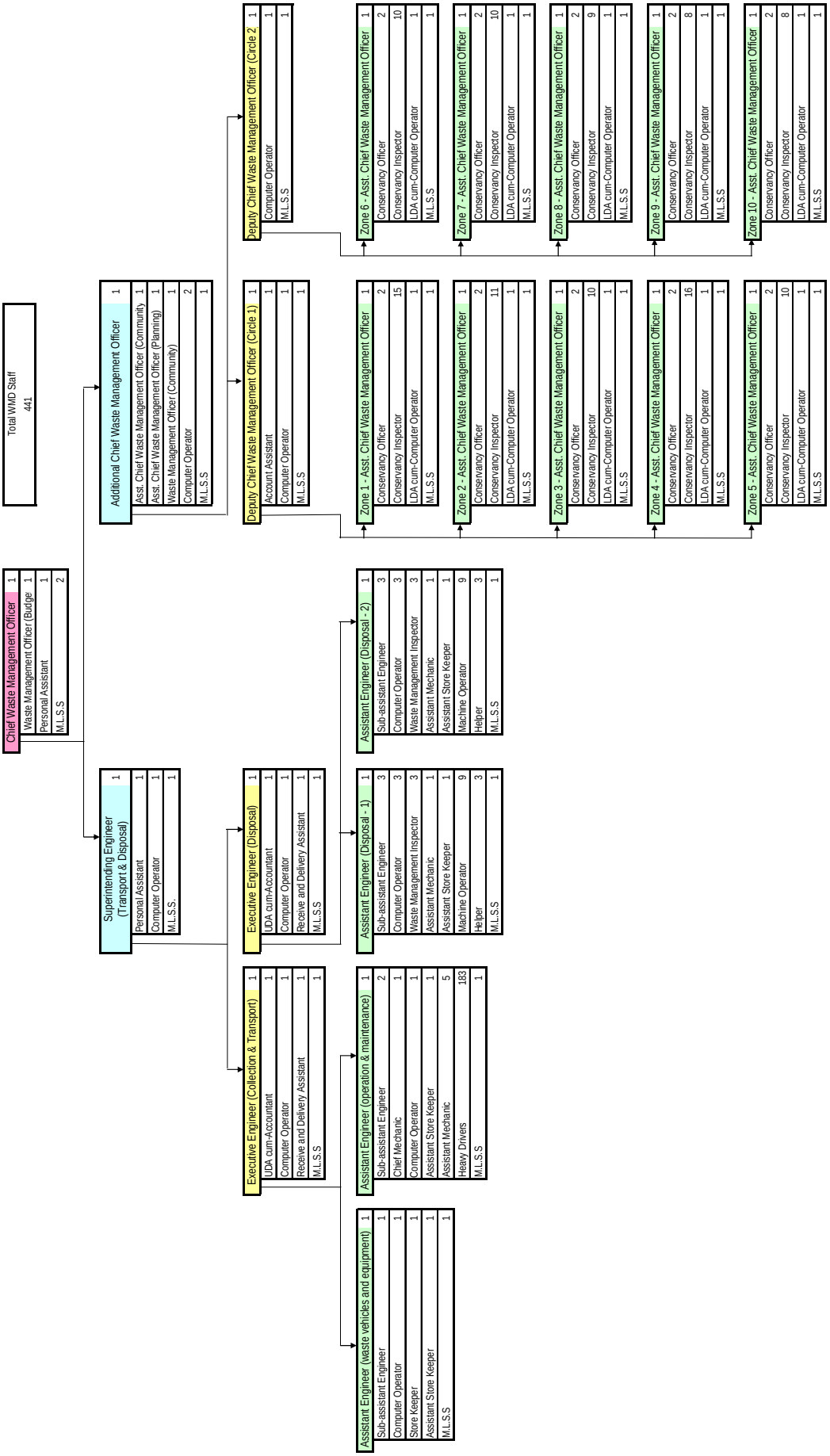


Figure 1.3-4 Organogram of WMD Approved by the Central Government in 2008

Table 1.3-3 DCC C/P Team (as of End of November 2010)

Project Chief: Chief Executive Officer (CEO) of DCC	
Project Manager: Chief Waste Management Officer (CWMO)	
Project Management and Coordination Group	**Group Leader;** CWMO **Deputy Group Leader;** Project Director of Landfill Improvement Project **Members;** Executive Engineer (Collection and Transport) (in charge), Assistant CWMO (Planning) (in charge)
Community SWM Group	**Group Leader;** Additional CWMO (in charge) **Deputy Group Leader;** Waste Management Officer (Community) (in charge), Conservancy Inspector (Ward 36) **Members;** 13 Conservancy Officers, 21 Conservancy Inspectors
Collection and Transportation Group	**Group Leader;** Executive Engineer (Collection and Transport) (in charge) **Deputy Group Leader;** Assistant Engineer (Mechanical) **Members;** Assistant Engineer (in charge), Sub-assistant Engineer/Foremen (Mechanical), Chief Mechanic (in charge), Assistant Store Keeper (in charge), Assistant Mechanic (in charge), Account Assistant/Transport Supervisor, Transport Supervisor (in charge), Assistant Transport Supervisor, 2 Conservancy Inspectors
Landfill Management Group	**Group Leader;** Project Director of Landfill Improvement **Deputy Group Leader;** Assistant Engineer (Mechanical) **Members;** Assistant Engineer (Disposal-1) (in charge), 3 Landfill Inspectors, 7 Dumping Instructors, 6 Weighbridge Operators, 7 Mechanics, 8 Cleaners, 2 Car Wash Staffs, Heavy Equipment Operators (8 Bulldozer Operators, 5 Excavator Operators, 4 Tyre Dozer Operators, 7 Helpers), 20 Guards
Financial Management Group	**Group Leader;** Chief Account Officer **Deputy Group Leader;** Waste Management Officer (Budget)

(Note: as of December 2010)

JICA Expert Team is comprised of the following personnel.

Table 1.3-4 JICA Expert Team

JICA Expert
Chief Advisor/Institutional Setup
Deputy Chief Advisor/Solid Waste Management
Expert for Community Participation/Communication
Expert for Collection and Transport/Public Relations I
Expert for Community Participation II/ Public Relations II
Expert for Final Disposal Management
Expert for Training for Operation and Maintenance of Final Disposal
Expert for Waste Collection Vehicle and Equipment Maintenance
Expert for Financial Management
Expert for Collection Vehicle Operation Planning
Project Administrator
National Staff
Project Coordinator for Project Management/Coordination and Financial Management
Project Coordinator for Community Participation

Project Coordinator for Collection and Transport
Project Coordinator for Landfill Management
Project Coordinator for Public Relation Activities
Project Coordinator for Community Participation to New Collection System
Project Coordinator for New Collection System
Office Administrator
Other Staff (Field Surveyors, Monitors, Office Construction, GIS Operator, etc)

(7) Meetings for Project Management and Coordination

For Project management and coordination, Project Team has held the following meetings. Meeting memos have been kept for Steering Committee (St/C) Meetings and Project with signatures of the Chairpersons and Chief Advisor (or Deputy Chief Advisor) of JET (refer to Appendix of this report).

Table 1.3-5 Meetings Held in the Project

Type	Function	Member	Frequency
Steering Committee Meetings	➢ decide direction of the Project ➢ review Progress Reports ➢ approve Annual Activity Plan	Chairperson: CEO of DCC Members: Relevant Department Heads of DCC, Representatives from the Central Government, Representative(s) from JICA Bangladesh Office, Representative from Embassy of Japan (Observer), Chief Advisor of JET Secretary: Superintending Engineer (SE) of WMD	Twice a year (October and March in principle)
Project Team Meetings	➢ monitor activities of the Project ➢ discuss and decide technical matters	Chairperson: CWMO (Project Manager) Members: Group Leaders, Deputy Group Leaders, WBA Core Team Members, JET members	Monthly (Actually once in two months on average)
WBA Core Group Meetings	➢ monitor activities ➢ discuss technical matters on WBA	Chairperson: Additional CWMO Members: Two Conservancy Officers (COs) for Circle 1 and 2, four Conservancy Inspectors (CIs) in charge of WBA 1 – 4, JET members in charge	Weekly (Actually thrice in a month on average)
WBA Team Meetings	➢ monitor activities ➢ discuss and decide technical matters on WBA	Chairperson: Additional CWMO Members: WBA Core Group members, COs and CIs of WBA target wards	Weekly (Actually twice in a month on average)
Landfill Management Unit (LMU) Meetings	➢ discuss and decide technical matters on landfill management	Chairperson: Site Manager of Matuail Landfill Members: Representatives from Landfill Inspection Group, Dumping Instruction Group, Mechanic Group, Cleaner Group, Heavy Equipment Operator Group, etc., JET members in charge	Weekly (Actually almost every week)

Type	Function	Member	Frequency
Landfill Management and Coordination Meetings	➢ discuss and decide technical matters on landfill management	Chairperson: Site Manager of Matuail Landfill Members: Representative(s) from Mechanical Division 2 of Engineering Department of DCC, Representative(s) from Transport Department of DCC, or other representatives as required, LMU members, JET members in charge	Occasionally
WMD Budget Committee Meetings	➢ monitor actual expenditure for SWM ➢ prepare budget proposal for SWM ➢ discuss and propose allocation of approved budget	Chairperson: SE of WMD Members: Additional CWMO, Executive Engineers for Collection/Transport and Final Disposal, Deputy CWMOs for Circle 1 and 2, Budget Officer of WMD, JET members in charge	Occasionally according to budgeting schedule
Group Meetings	➢ discuss and decide technical matters relevant to each group	Chairperson: Group Leader Members: Group members, JET members in charge	Occasionally as per necessity
	Recently after 2nd or 3rd JFY, group meetings have been transformed into other type of meeting as listed above in this table.		

Chapter 2 Achievement of Project Purpose

Achievement of the Project Purpose is described below by showing how Objectively Verifiable Indicators (OVIs) for the Project Purpose have been attained. The Project is being implemented based on version 3 of the Project Design Matrix (PDM) (Refer to Appendix).

Project Purpose: The solid waste management services of Dhaka City Corporation are improved.

2.1 Indicator 1: More than 52.5% (or 2,053ton/day) of wastes is transported to landfill sites and disposed properly by the end of Project.

Baseline	Target
44% or 1,400 ton/day (2004, during Development Study)	52.5% or 2,053 ton/day (2011)

Attainment of Objectively Verifiable Indicator (OVI)

a. Status

Achievement
Around 2,000 ton/day or 51% of estimated total generation (average of the last week of July 2010)
Around 1,670 ton/day or 41% of total estimated generation (average of the third week of January 2011)

Transported amount of wastes means the total weight of wastes transported daily to the two landfills being operated by Dhaka City Corporation (DCC). At the moment, only weighbridge at Matuail Landfill has been operated. It has been operated since its installation in October 2007. Though some drivers of waste collection vehicles still do not follow instruction of weighbridge operators for measuring weight of wastes and sometimes the weighbridge does not work properly due to power break-down or other reasons. In those cases, vehicle types and number of those vehicles that are not weighed have been recorded and amount of wastes transported by those vehicles has been estimated using average loaded wastes by types of vehicles obtained through past surveys.

Though weighbridge at Amin Bazar was installed in December 2010, it has yet to be fully operated due to problems in staffing of weighbridge operators and in electricity supply. For October 2009 and February 2010, Amin Bazar data was an approximation by the concerned DCC personnel without precise vehicle data. However, waste amounts transported to Amin Bazar Landfill Site were surveyed in the last week of July 2010 and third week of January 2011 through conducting a survey in which vehicle numbers of waste collection trucks by vehicle type were counted for a week. Amount of waste transported to the site was estimated in the same way for the vehicles that have not been weighed at Matuail Landfill Site.

No.	Time of Survey	Average Transported Waste Amount (ton/day)			Percentage of transported wastes to generated waste*
		Matuail	Amin Bazar	Total	
1	Last week of Oct. 2009	1,310	700-800	2,000-2,100	53% - 56%
2	Last week of Feb. 2010	1,230	700-800	1,900-2,000	49% - 51%
3	Last week of Jul. 2010	1,480	530	2,000	51%
4	Last week of Nov. 2010	1,120	---	---	---
5	Third week of Jan. 2011	1,180	490	1,670	41%

(Note) * Percentage of transported wastes to the estimated generated waste is calculated with total transported wastes to waste amount estimated in the Development Study for respective years, i.e., 3,780 ton/day for 2009, 3,909 ton/day for 2010 and 4,098ton/day for 2011

Attainment of Objectively Verifiable Indicator (OVI)

As shown above, approximately 2,000 ton/day of wastes or around 50% of generated wastes have been transported to the two DCC landfills as of July 2010. It can be said the Project has almost attained the expected level of this target.

However, January transported reduced sharply to around 1,670 ton/day though number of operated waste collection vehicles provided by the Environment Grand Aid Program (EGAP) has been increased compared with that in July 2010. Though Project Team could not clearly identified the reason(s), the following factors could be listed as causes of the decrease.

1) As January is the middle of the dry season, waste generation might have substantially decreased compared to that in July that is in the middle of the wet season.
2) Since December 2010, roads near Matuail Landfill have been blocked due to flyover construction and serious traffic jams have frequently occurred since then. With this situation, trips for waste transport take quite a long time and number of trips has decreased.
3) It is allegedly said that wastes are often dumped in low lay lands upon requests of landowners. Sometimes they buy wastes to reclaim their swamps or ponds. Generally, these happen in the dry season when the water level goes down.

Measure taken to increase the capacity or amount of transported are described and the reasons of the increase are analyzed below.

In the development study, waste amounts transported to dumping sites were surveyed in the dry and wet seasons. The survey revealed that a total of 969 ton/day of wastes in the dry season, while 1,416 ton/day in the wet season (the average was 1,193 ton/day). The decreased amount, i.e., 330ton/day, seems not unusual. It also seems that the low amount of transported wastes in January 2011 does not mean the decrease in waste collection and transport capacity of DCC.

At first, the Project Team had made efforts to increase transported waste by improved efficiency through reviewing collection routes of existing waste collection vehicles as suggested by the Preparatory Study Team for the Project. However, due to problems in measurement of the waste amount transported, such as non-cooperation of the drivers, frequent power outbreaks, absence of weighbridge operator in the night shifts, the initial idea was not realized.

Besides, efforts for increased transport with increased operation rate through shortening repair time of collection vehicles resulted in substantial attainment in the 2nd fiscal year of Japan (JFY). Some engineer of DCC C/P increased times of outsourcing of repair. In this way, contract amount of each repair work could be smaller and open tender, which generally takes lengthy procedure, was not required. With this method, the average repair time has reduced from 250-300 days to around 60 days. As the government procurement rules have been changed and frequency of repair sourcing is limited in the new rules, the effect of this method turned smaller.

As engineers in Mechanical Division-1 of Engineering Department have followed this method, the effect has still continued though the effect has been lowered. Besides, DCC C/P and JICA Expert Team (JET) held workshops to discuss on how to reduce the time and how to enhance quality of repair works. Recommendations based the workshop results are compiled in a report.

Project Team prepared a request for a general grant aid project in the 2nd JFY. However, it was not approved by the Government of Japan. The Project Team prepared an application for Environment Grant Aid Program (EGAP), and the request was selected as the Program for Improvement of Solid Waste Management in Dhaka City toward the Low Carbon Society.

The Outline Design Study of the Program wad conducted and provision of 100 collection vehicles and construction of a repair workshop were determined in August 2009. The operation of the vehicles has started since July 2010. As of March 2011, around 50 were in operation. In addition, 27 container carriers with capacity of 5-tons and 78 containers were supplied by Amin Bazar Project for which Japan Debt Cancellation Fund (JDCF) was applied. Those vehicles have been in operation.

Attainment of Objectively Verifiable Indicator (OVI)

These supports for equipment and facility have contribute to enhancing the capacity for waste collection and transport of DCC. Further, DCC C/P developed its capacity through planning and implementing introduction, operation and maintenance of the vehicles. Developed capacity might also be an important factor to attain the target.

Another important contributing factor for the attainment of this OVI might be increase in the coverage of primary collection service. The Project has promoted use of Primary Collection Service Providers (PCSPs). Improved monitoring and permission system and enhanced coordination among community, PCSPs and DCC might cause improvement of PCSPs' services in quantity and quality, and resulted in reduced open dumping and thus increased amount of wastes collected and transported by DCC.

b. Issues

- To fully satisfy this OVI and the Overall Goal in future, effective and efficient use of all EGAP vehicles will be essential. DCC should complete recruit additional 50 drivers and 100 truck cleaners.
- Without coordination among DCC, Primary Collection Service Providers (PCSPs) and the community, waste amount transported to the two landfill sites cannot increase because DCC can only collect and transport wastes that are brought to DCC's collection points. DCC has to sustain the activities through Ward-based Approach (WBA).
- To encourage drivers for more trips is also an important element. DCC has to enhance discipline as well as incentive and for the drives.

2.2 Indicator 2: The ratio of city residents in DCC who are satisfied with the collection services provided by DCC (or private companies in privatized zones) reaches 50% by the end of the Project from the current level of 36% (Master Plan Study, 2005).

Baseline	Target
36% (2004, during Development Study)	50% (2011)

Attainment of Objectively Verifiable Indicator (OVI)

a. Status

Achievement
* 50% (Public Awareness Survey for OVI Evaluation, July 2010)

The Project Team has conducted two types of public awareness surveys: 1) Public Awareness Survey for OVI Evaluation and 2) Public Awareness Survey for WBA Target Wards.

1) Public Awareness Survey for OVI Evaluation

In the Public Awareness Survey at the time of JICA Development Study in 2004, 280 households were investigated; 80 with high-income (more than Tk.50,000/month), 120 with middle-income (more than Tk.10,000/month and less than Tk.20,000) and 80 with low-income(less than Tk.5,000). The baseline figure (36%) was calculated with total number of respondents who were satisfied with the DCC services (99) divided by total number of the samples (280).

Attainment of Objectively Verifiable Indicator (OVI)

Income Level	Satisfy	No	N/A	Total
High	46	33	1	80
%	57.5%	41.3%	1.3%	100.0%
Middle	34	86	0	120
%	28.3%	71.7%	0.0%	100.0%
Low	19	61	0	80
%	23.8%	76.3%	0.0%	100.0%
Total	99	180	1	280
%	35.4%	64.3%	0.4%	100.0%

(Source: JICA Development Study)

The Public Awareness Survey for OVI Evaluation was conducted similarly by the Project in July 2010, during the 5th JFY to measure the attainment of this OVI, with records of the interviewed households at previous survey in 2004. The same households interviewed in the survey conducted in the Development Study were approached in principle for the OVI Evaluation Survey as well. The result of the OVI Evaluation Survey is shown below.

Category	Percentage of the residents who are satisfied at time of baseline (2004, Development Study)	Percentage of the residents who are satisfied at the end of Project (2010, 5th JFY)
Primary Collection	85%	72%
Secondary Collection	**35%**	**50%**
Street Sweeping	38%	47%

(Source: Public Awareness Survey for OVI Evaluation)

The result above shows that the satisfaction rate for secondary collection, the figure to be considered for this OVI, has achieved the target of 50%.

As this Survey covers not only WBA target wards but also the whole city of Dhaka, Project activities that did not precisely target the WBA target wards have also possibly contributed to the increase in the satisfaction rate. The following activities that have targeted all wards may have contributed to the increase in the satisfaction rate.

- Clean Dhaka Ward Contest was implemented every year since the 2nd JFY, through which performance of Conservancy Inspectors (CIs) and PCSPs were evaluated with defined criteria and best CIs and PCSPs were awarded. Primary collection and cleansing activities might have been improved through the contest.
- Extensive Public Relations (PR) activities have been implemented in the Project. For most of significant events held by the Project, press release notes have been distributed to mass media before the events through JICA Bangladesh Office and PR Department of DCC. Project Team has provided information on the Project at many occasions when media persons visited the office and sites. As far as the Project Team has counted by July 2010, there were 146 newspaper articles on the Project were circulated in major news papers, and 23 TV news on the Project were broadcast with a total time of 23 minutes and 17 seconds. Billboards were installed at 7 most congested places located throughout the City (In two years from January 2008, billboard with a size of 9 m x 3 m were installed in most congested areas along main roads. Main message of the billboard was to encourage people to clean the city.) With these PR activities, the citizens might come to know DCC's efforts towards Clean Dhaka.
- Counterpart list of the Community Group includes a Waste Management Officer, 13 Conservancy Officers (COs), and 21 CIs. These persons have frequently participated to

Attainment of Objectively Verifiable Indicator (OVI)

meetings of the group as well as WBA Team meetings and might have improved DCC solid waste management (SWM) services even though their wards were not included as target wards for full set of WBA activities.

The results of the Public Awareness Survey also reveals that the satisfaction rate on street sweeping has also increase, while that of primary collection has decreased. The decrease in satisfaction rate for primary collection may perhaps be due to the change in PCSPs in various parts of Dhaka City after the change in the government administration in the 4th JFY. In many WBA target wards, PCSPs in charge of the areas were replaced by newly established PCSPs with lack of capacity, labor forces and equipments to conduct their services properly and regularly. Despite the decrease in the satisfaction rate with PCSP services, the ratio of the residents who use door-to-door waste collection service has increased from 66% to 89% and the ratio of the citizens who discharge their waste to neighboring vacant places has decreased to 18% to 0.4%.

2) Public Awareness Survey for WBA Target Wards

Before implementing WBA activities, a baseline survey was conducted with residents in the target wards at the beginning of the JFYs. Two years later or at the end of the next JFY, the Project Team conduct the awareness survey again in the target wards with same questionnaire and same household in principle. Finally, a terminal evaluation survey was conducted for all WBA target wards in the 5th JFY. Results of the awareness surveys conducted for this purpose are as shown below.

	Percentage of the residents who are satisfied with the collection services provided by DCC at time of baseline and year of the survey	Percentage of the residents who are satisfied with the collection services provided by DCC in two years later and year of the survey	Percentage of the residents who are satisfied with the collection services provided by DCC in the final JFY and year of the survey
Cycle 1 (2 wards implemented from 2nd JFY)	21% (2007, 2nd JFY)	63% (2009, 3rd JFY)	26% (2010, 5th JFY)
Cycle 2 (4 wards implemented from 3rd FY)	42% (2008, 3rd JFY)	68% (2010, 4th JFY)	65% (2010, 5th JFY)
Cycle 3 (7 wards implemented from 4th JFY)	65% (2009, 4th JFY)		65% (2010, 5th JFY)

(Source: Public Awareness Surveys during the Project)

Overall, the satisfaction rate for each cycle in the final JFY has stayed the same or slightly or significantly increase compared to the baseline survey.

For Cycle 1 and 2, the satisfaction rates in the mid-term evaluation, i.e., two years after the commencement of WBA activities there, show high increase but those in the terminal evaluation in the 5th JFY fell down from the rates in the mid-term evaluation. Some reasons can be assumed for this result:

- The Project have usually made intensive input in the first year of the implementation of WBA activities, through kickoff meetings, Community Unit Working Group (CUWG) trainings, several CUWG meetings, campaigns at ward level, etc. These activities may have caught attention of the respondents of the survey and raised their sense of satisfaction, resulting in high satisfaction rates in the mid-term evaluation.
- Satisfaction rate for the secondary collection refers to the process from collection point (containers, dustbins or collection stations) to the landfill sites. As collection point is the

Attainment of Objectively Verifiable Indicator (OVI)
interface of primary collection and secondary collection, the results for secondary collection may have been skewed by the performance of primary collection. As mentioned above, the performance of PCSPs in many areas have deteriorated in the latter half of the 4th JFY due to the change in government administration. In some cases where wastes have been scattered at collection points due to the PCSPs, the residents may have regarded it as lack of proper management of secondary collection. ➢ In some high-income areas where the residents' awareness on SWM has increased during the course of the Project, their expectations on proper SWM have also increased significantly. This reason was confirmed during a follow-up survey of this Public Awareness Survey from high-income residents expecting improved SWM to cope with high population growth in their neighborhood. As ratio of satisfied residents relates with their level of expectation, there might be some cases that the ratio could be lowered due to raised expectation even the service level remains same. There might also some cases that the results of the interview survey was affected some happenings, troubles or accidents occurred in the ward just before the survey. Interpretation of these data sometimes faces difficulty.
b. Issues
➢ Although WBA can improve residents' satisfaction on SWM services, their satisfaction sometimes decreases once the intensive input from the Project terminates after the initial few years of implementation. From now on, consideration is to be made on how to sustain such improved SWM condition in the long run and on how to cope with change in various social and political circumstances. Effective and efficient use of community budget is to be carefully considered for sustaining such activities. ➢ WBA activities, focusing intensive inputs to specific parts of wards, tend to improve the SWM condition of the wards and the satisfaction rates of the residents. Therefore, from now on, WBA should be expanded to other wards of Dhaka City. ➢ As WBA only targets specific parts of the targeted wards, simultaneous implementation of activities targeting all wards of Dhaka City is necessary to improve the overall condition of SWM in Dhaka City. Comprehensive capacity building of WMD staff on SWM and public awareness raising activities targeting all wards can contribute to this effort. ➢ For continuation and expansion of WBA as well as other public awareness raising activities, staffing of core personnel for its management is essential. DCC has to recruit capable Assistant Chief Waste Management Officers for Community and for each zone.

Chapter 3 Attainment of Outputs

The extent of attainment of the five Outputs of the Project is described of below as how much each of objectively verifiable indicators (OVIs) of respective Outputs is satisfied or reach to the objective figures. This Project Completion Report applies OVIs defined in version 3 of the Project Design Matrix (PDM).

3.1 Output 1: Capacity of management and coordination of solid waste management activities is improved.

Attainment of Objectively Verifiable Indicator (OVI)

Output 1- Capacity for management and coordination of solid waste management activities is improved.

1.1 Managers of Waste Management Department (WMD) can formulate Annual Activity Plans and budget proposal by the end of the Project.

Baseline	Target	Attainment
* Group leaders and deputy group leaders were not accustomed to formulate annual activity plans and budget proposal based on the plans.	* Managers of WMD (down to Assistant Engineers and Assistant Chief Waste Management Officer (CWMO) or group leaders/deputy group leaders can formulate annual activity plans and budget proposals of their sections or groups.	* Group leaders and deputy group leaders are able to formulate annual activity plans of respective group with a little help of JET. * Engineers of WMD can prepare Annual Activity Plans and budget proposal for most of activities. * Community Group has experienced bottom-up budgeting and execution planning for approved budget with support of Financial Management Group. * Budget Committee of WMD is preparing budget proposal for the next year.

a) Status:

This Project aims at supporting DCC for implementation of Clean Dhaka Master Plan (M/P). To implement M/P with target year of 2015, DCC have to formulate and implement annual plan, monitor/evaluate implementation and continue for next year. As the M/P is the first master plan in Bangladesh on SWM, it is the first time for DCC Counterpart to implement a mid- or long-term plan and they are not familiar to run the management cycle that start with annual planning,

Respective group leaders and deputy group leaders have been becoming increasingly aware of their groups' annual activity plans year by year and are able to prepare the annual activity plans. Compared to the previous years, group leaders are taking more initiative in the planning of Project activities.

For most of activities, engineers have been able to prepare budget, while Community Group and relevant Conservancy Officers (COs) has been trying budgeting and budget execution planning by bottom-up approach since 4th Fiscal year of Japan (JFY).

Budget Committee of WMD has been established and developed procedure and schedule for preparation the next FY budget. The Committee will link budgeting with activity plan. For detail, refer to Sections 3.5 and 4.6 of this report.

b) Issue:

With full functioning WMD, the overall activities and budget for SWM can be well planned. Full staffing, especially that of managers of WMD (down to Assistant Engineers and Assistant (CWMO) (for Planning and each of ten Zones)) and a Budget Officer is required for proper planning and budgeting.

Attainment of Objectively Verifiable Indicator (OVI)

1.2 Percentage of Project's activities whose completion is delayed more than one month is reduced to 70% in the 5th JFY (April 2010 to March 2011)

Baseline	Target	Attainment
* Almost all activities of action plans formulated in the development study were not implemented or delayed more than a month. .	* Less than 70% of Project's activities of the 5th JFY are delayed.	* 72% of Project's activities are delayed more than a month in the 4th JFY. * In the 5th JFY, more percentage of activities would delay more than a month.

a) Status:

The Project has 5 output and 25 activities to attain the 5 outputs according to the PDM. With checks of monitoring sheets of the five Groups corresponding to five Outputs of the Project, it is estimated that only 28% of the activities for the 4th JFY have obtained expected results and completed without delay of one month or more. For the 5th JFY, 24% of activities have been completed without delay of one month or more because of the following reasons.

1) Many of the important managers' posts of WMD are still vacant. Though many managers of the Conservancy Wing of WMD, such as Additional CWMO and Deputy CWMO retired recently or are retiring, those posts have not filled.
2) Due to the delay in procurement of waste collection vehicles and repair and maintenance tools provided by Environmental Grant Aid Program (EGAP). as well as construction works at Amin Bazar Landfill, related activities have been delayed.
3) Many activities are affected directly or indirectly with political situation or other circumstances, such as union matters, frequent changes in DCC top managers, insufficient regulatory capacity of the government on SWM.

b) Issues:

Full staffing to WMD is essential for schedule control of activities. Especially, management posts should immediately be filled.

DCC has not accustomed to keeping schedules. Even operational or technical matters, they are often politicized in case they cause conflicts of interests among groups or sections. Struggles among groups or sections are severe. To change of these circumstances would be very tough and take long period if it is possible as this is a part of organizational culture in the government.

1.3 Eight good practices and cases are disseminated by the Project.

Baseline	Target	Attainment
* Two good practices, i.e., i) construction of sanitary landfill at Matuail and ii) Ward-based Community SWM, were developed in the development study and its follow-up were also conducted. * Ward-based Community SWM were not sustained after the development study.	* Eight good practices are disseminated.	* Eight good practices have been selected. * A booklet on the good practices has been developed. Good practices will be disseminated in Final Seminar of the Project and DCC website.

a) Status:

The Project Team has introduced new practices to improve SWM in Dhaka City. The Project Team has selected the following eight cases as good practices to disseminate, taking criteria of i) Approach (innovativeness), ii) Challenges, iii) Sustainability, iv) Replicability (dissemination to other cities) into consideration. Desemmination activities have also started.

1) Development of SWM at the Ward level as Ward-based Approach

Attainment of Objectively Verifiable Indicator (OVI)

2) Awareness raising of the citizens and other stakeholders by PR activities

3) Organizing Community Unit Working Group (CUWG) and supports for their activities linked with improvement of secondary collection by DCC

4) Development of guidelines and permission procedure for Primary Collection Service Provider (PCSP)

5) Introduction of fixed time station collection system for collection and transport with compactor vehicles

6) Improvement in operation and maintenance of final disposal

7) Analysis of actual SWM cost structure

8) Establishment of a Secretariat of members of the six city corporations to coordinate and implement SWM programs together

Project Team has developed a booklet of the eight good practices. The booklet has been widely distributed. The good practices are to be disseminated in final seminar of the Project as well as through DCC website.

b) Issues:

Sustainability of some good practices has not yet assured. Full staffing to WMD as well as monitoring by and support from WMD Headquarters, DCC top managers and related ministries would be necessary.

1.4 Clean Dhaka Master Plan is revised according to the change in social conditions and environmental consciousness of the citizens by the end of the Project.

Baseline	Target	Attainment
* Clean Dhaka Master Plan was formulated in 2005.	* Clean Dhaka Master Plan is revised. * Revised Master Plan includes newly added jurisdiction and activities for recycling taking policy environment for SWM in Bangladesh.	* A survey on recycling and a socio-economic survey for expanded areas of DCC jurisdiction were conducted in the 4th JFY. * Based on the survey results and experiences of the implementation of the master plan through the Project, draft revised master plan has been developed. * The draft has been converted to the final by reflecting comments from representatives of the related departments of DCC and with discussion in Steering Committee meeting held in January, 2011.

a) Status:

In the 4th JFY, a survey on waste recycling markets and trend was carried out and its possible implication was analyzed. A socio-economic survey for newly added jurisdiction of Dhaka City was also conducted in the 4th JFY.

Based on the results of these surveys as well as feedbacks of the experiences obtained through the Project implementation, a draft revised master plan has been developed. The draft has been reviewed also by the representatives of the related departments of DCC and comments from the representatives are being reflected to make the revised master plan final.

The draft has discussed and finalized in the Steering Committee held in January 2011.

Attainment of Objectively Verifiable Indicator (OVI)

1.5 Activities for Ward Based Approach are officially included in the job of WMD staff.

Baseline	Target	Attainment
* DCC did not have concepts of Ward-based Approach (WBA), such as decentralization of SWM to Zone and Ward level, and enhanced linkage between primary and secondary collection, etc.	* WBA activities are officially included as job of WMD staff.	* In the latter half of the 2nd JFY, concepts of WBA were developed and introduced as pilot projects in two wards. * During the 3rd and 4th JFY, target wards for WBA were expanded in eleven wards. * In February 2010, CWMO issued an order that states that WBA activities are job of WMD staff. * In the 5th JFY, target wards for WBA components have been expanded to five wards. DCC has taken initiative for WBA expansion in two wards with its own finance.

a) Status:

To improve the SWM in a comprehensive way, Project Team introduced WBA. WBA is a package of activities for SWM improvement and has four components as shown in Section 4.1 of this. WBA has concepts of 1) integrated improvement with intensive resource inputs in target areas, 2) decentralized waste collection and transport, 3) better coordination between primary and secondary collection, and among resident communities, PCSPs and DCC, 4) improved working conditions of cleaners, etc. WBA activities have been implemented with the following progress. For details, refer to Section 4.1 of this report.

- In the latter half of the 2nd JFY, concept of WBA was introduced as pilot projects that were implemented in two wards (Wards 36 and 76). However, the Project Team could not construct a ward office in Ward 76 due to opposition by the residents near the planned site.
- During the 3rd and 4th JFY, target wards for components WBA were expanded to four wards (Wards 44, 63, 69 and 75) and seven wards (Wards 5, 42, 45, 49, 50, 53, and 84), respectively.
- In February 2010, CWMO issued an order that states that WBA activities are job of WMD staff.
- In the 5th JFY, DCC has taken initiative for WBA expansion in two wards with its own finance, while Project Team also has been expanding to other three wards mainly with a fund of the Project.
- Throughout the Project WBA 2 for improvement of working conditions has been extended in 49 wards.

b) Issues:

For expansion and continuation of WBA activities in all wards, except those wards where SWM services are privatized, recruitment of capable and dedicated Assistant CWMOs for Community and for each Zone is highly necessary. Supports from WMD headquarters and DCC top managers would be quite important.

As descried in 2.2 of this report, when the Project introduced WBA in some areas of targeted wards, the activities were intensively implemented there in a year and the satisfaction rate of residents of the area on DCC's SWM services increased. However, in two or three years later, the satisfaction rate in the area decreased. The Project has input recourses for introduction of WBA, while continuation of the activities was depended on WMD's efforts. To keep high satisfaction rate or to provide reliable SWM services to all citizen, continuation of the activities is also important, while expansion of WBA activities is required to grade up the SWM over the city and to achieve Overall Goal of the Project.

3.2 Output 2: Capacity for participatory solid waste management program is improved

Attainment of Objectively Verifiable Indicator (OVI)

Output 2 - Capacity for participatory solid waste management program is improved

2.1 More than 20 Conservancy Inspector (CI), Conservancy Supervising Inspectors (CSI) and CO obtain enough knowledge and skills and are motivated to promote ward-level community solid waste management by the end of the Project.

Baseline	Target	Attainment
* A few CIs had obtained some knowledge on community SWM through the Development Study.	* 20 CIs, CSIs and COs have knowledge and skills and are motivated to promote community SWM.	* 40 CIs/COs have been trained in PRA, TOT, WBA training courses, etc. * 25 CIs/COs for organizing community activities, 23 for organizing community meetings, 20 for organizing kick-off meeting, 18 for facilitation of community meetings, 11 for documentation, 10 for TOT and 9 for presentation are well experienced (at the time of the Terminal Evaluation of the Project). * 21 CIs/ COs are well motivated for self-initiative, while 17 are well motivated for regular meetings and for communication with communities (at the time of the Terminal Evaluation of the Project)..

a) Status:

The following activities were carried out to develop the capacity of CIs and COs:

1) Practical training programs for CIs/COs including WBA Training, PRA Training, Computer Training, and TOT.
2) On-the-job-training: 1) Taking charge of trainers of PCSP Training, CUWG Training, WBA Training, 2) Facilitation and presentation at Kickoff Meetings and community meetings, and 3) Communication and coordination with ward commissioners, CUWG members, various local organizations, and PCSPs.
3) Discussion in Community Group C/P meetings and WBA meetings, and training of new C/P through the meetings.

Based on the self-evaluation survey conducted in August 2010 in the 5th JFY, the following attainments were confirmed as a result of the activities mentioned above:

1) 36 CIs/COs have been trained in PRA, TOT, WBA training courses, etc.
2) 25 CIs/COs for organizing community activities, 23 for organizing community meetings, 20 for organizing kick-off meeting, 18 for facilitation of community meetings, 11 for documentation, 10 for TOT and 9 for presentation are well experienced.
3) 21 CIs/COs are well motivated for self-initiative, while 17 are well motivated for regular meetings and for communication with communities.

During the period from September 2010 and January 2011, additional four CIs/COs were newly trained, and number of trained CIs/COs has reached to 40 by the end of the Project.

b) Issues:

It is important to develop the capacity of new CIs/COs and increase the number of CIs/COs who have enough knowledge and skills on community SWM. However, what is more important is to keep the motivation of CIs/COs who has been working as DCC C/P for a long time. They have enough experience and capacity, and it is expected that they will play key roles when expanding the community SWM as a system of DCC. However, some of experienced CIs are not continuing the community SWM at their wards.

Attainment of Objectively Verifiable Indicator (OVI)

In order to keep the motivation and effort of CIs/COs on community SWM need to be recognized by WMD Headquarters. WMD Headquarters and zone offices should support CIs/COs and monitor their works. In the beginning of 5th JFY, WBA management organization and a monitoring system, as WBA Core Group, have been established. Although the WBA Core Group is a temporary setup until the full staffing of WMD, it is important to make the system work and continue the management and monitoring of WBA activities.

2.2 A community-based SWM Guideline is prepared and ready for use by the end of 2007/08 financial year of Bangladesh.

Baseline	Target	Attainment
* Clean Dhaka Master Plan includes policy and plan for ward-based community SWM. * No guideline had been developed for community SWM before the Project.	* Guideline is prepared and ready for use by 2007/08.	* The Guidelines have been prepared as planed and used. * The Guidelines have been modified through feedbacks from actual use.

a) Status:

The Guideline have been prepared and have been used as shown below:

1) It was distributed to Community Group C/P and used to train newly joined CIs.
2) In sessions of WBA Training the Guidelines have been used. Objectives, principles of community SWM and the contents of the Guideline were explained to the participants of the training (CIs and COs).
3) WBA 3 activities for promotion of Community SWM have been planned and implemented based on the Guidelines.
4) The Guidelines have been continuously modified during the Project period through feedbacks from actual use.

b) Issues:

The Guidelines should be continuously reviewed and revised, if necessary, based on the lessons learned from actual application.

2.3 Permission and monitoring system for Primary Collection Service Providers (PCSP) is improved and introduction of the improved system to whole Dhaka City starts.

Baseline	Target	Attainment
* Conservancy Department had developed a PCSP registration system before the Project.	* Permission and monitoring system is improved and introduction to whole Dhaka City starts.	* Permission and monitoring forms have been developed. * Field test for introduction has been conducted in WBA wards * CEO and Mayor approved the new permission and monitoring system. * The new permission and monitoring system has been used regularly since October 2010.

a) Status:

Four kinds of permission and monitoring forms have been developed as described in Section 4.3 of this report. The forms were introduced into WBA wards to test them in the field. In addition, discussions among DCC and newly established PCSP Association were made. Based on the field test and discussions, the forms were finalized.

The purpose of the improvement was to make the system more transparent and to raise the primary

Attainment of Objectively Verifiable Indicator (OVI)

collection service standard. Major points on the improvement are as follows:
1) Objective evaluation criteria were clarified, 2) Voices from community people (satisfaction level, complaints, etc.) were incorporated in the evaluation, and 3) Observation by CIs/COs, who know the actual situation in the field, were incorporated in the evaluation.

CEO has approved the new permission and monitoring system, and the Mayor has also approved it with some modification.

Two workshops have been conducted, inviting all PCSPs in Circle 1 and Circle 2 (South and north parts of the City). The new permission and monitoring forms have been used regularly since October 2010.

b) Issues:

It took a long time to get approval on the improved system and to be ready for introducing the system, because of the unstable political conditions which influence the PCSPs' conflicts much. Finally, new permission and monitoring system will be executed in all wards. However, it might not be possible to avoid political influence in the new system. The process of system introduction should be carefully followed.

2.4 Number of successful community initiatives reaches 20 by the end of the Project, through improved coordination among community, DCC and primary collection service providers.

Baseline	Target	Attainment
* There were some community initiatives found in a pilot project by the development study. * They were are not sustained.	* More than 20 successful community initiatives are found.	* 26 successful community initiatives have been attained.

a) Status:

Coordination among community, DCC and PCSPs took place frequently in implementation of WBA3 and WBA4.

Community people took initiatives in many wards where WBA has been introduced fully or partly (e.g. closing many dustbins by replacing them with containers or removing them with fixed-time station collection, and open dumping points by introducing primary collection or campaign activities, such as cleaning by themselves with DCC Cleaners and PCSPs, cultural events, rallies, mosque announcement, etc. Some good successful initiatives have been observed in the Clean Dhaka Week 2010 also.

Attainment of 24 community initiatives have been confirmed through a survey conducted in August 2010. Afterwards by mid-January 2011, two community initiatives have been added. Typical ones are as follows:

1) Introduction of primary collection and reduction of waste scattering in slum area.
2) Cleanliness improvement by public awareness raising and better coordination among DCC, community and PCSPs.
3) Reduce in illegal open dumping
4) Introduction of new collection system (fixed-time station collection)

b) Issues:

For the continuity of community initiatives, more input and facilitation from WMD Headquarters are required. In the beginning of 5th JFY, WBA monitoring system has been introduced through the WBA Core Group. This system should be followed and utilized by WMD Headquarter and zone offices, so that they can take necessary actions to ensure continuous community initiatives.

3.3 Output 3：Capacity for solid waste collection and transportation is improved

Attainment of Objectively Verifiable Indicator (OVI)

Output 3 - Capacity for solid waste collection and transportation is improved.

3.1 New collection systems suitable to the conditions of Dhaka City are developed and introduced to more than 20 areas.

Baseline	Target	Attainment
* There was no systematic planning or operation in collection and transportation.	* New collection system is introduced in more than 20 areas in Dhaka City.	* New collection system with compactors was introduced in 20 wards. * Improvement of existing collection system and introduction of arm rolls were carried out at six wards.

a) Status:

New collection system respectively designed to each area has been introduced in 25 areas in 20 wards as of mid-January 2011. For instance, bin collection system was introduced through WBA activities in Ward 36, 45, 63 and 69 and compactor collection in Ward 2, 5, 12, 22, 33, 36, 38, 41, 43, 44, 45, 49, 50, 52, 53, 57, 63 and 76 as well as through arm roll collection in Ward 7, 19, 23, 33, 34, 35, 36 39,52, 70,71 and 78. Efficiency of the secondary collection is significantly increased with the introduction of new collection system due to far less time for waste loading time to waste collection vehicles. With experiences and knowledge obtained through activities of WBA3 and 4, new collection system indispensable for the operation of collection vehicles of Environmental Grant Aid Project (EGAP) can be smoothly introduced.

b) Issue

DCC shall monitor the operations of the new collection systems so that the systems may take root in the areas

3.2 More than 50% of CIs and Cleaners have become conscious on safety and sanitation.

Baseline	Target	Attainment
* Conservancy Inspectors (CIs) and Cleaners, were not aware of safety and sanitation as well as of collection efficiency.	* Knowledge/skills and motivation of more than 50% of CIs and cleaners on safety and sanitation of cleaners have been developed.	* Around 4,000 Cleaners are provided with safety gears, first aid box and the workers' manual for improvement in their working environment and efficiency. * Some CIs are involved in WBA4 and have developed their knowledge/skills for efficient collection and transportation.

a) Status:

In 46 target wards of WBA 2, around 4,000 cleaners participated in the training on safety and sanitation and provided with cleaners' working manuals and safety-gears composed of the uniform, gloves, a mask, etc. In August 2010 at the time of Terminal Evaluation of the Project, JET made a survey on safety and sanitation awareness of CIs and Cleaners. The result showed that all 46 CIs involved in WBA by that time recognized importance of safety and sanitation of Cleaners' working environment and that all Cleaners more or less conscious of the matter.

b) Issue:

It is highly required for WMD Headquarters to keep providing safety gears replying to the request of CIs for encouraging CIs' and cleaners' safety and sanitation minds.

Attainment of Objectively Verifiable Indicator (OVI)

Although the workshops and training have made positive effects on safety and sanitation of CIs and Cleaners, there might be some issues to be addressed for sustainable consciousness firmly in minds of CIs and Cleaners.

3.3 More than 15 Conservancy Inspectors (CI) take initiatives for improvement of collection and transportation after they developed the capacity for the improvement.

Baseline	Target	Attainment
* There were few activities for improve waste collection at each ward by.	* At least 15 CIs take initiatives for improving waste collection.	* CIs have carried activities to improve waste collection in 18 wards.

a) Status:

WBA activities have been carried out 18 wards during the Project. Compactor vehicles arm roll container carriers have been introduced 50 vehicles including ones procured by DCC and around 30 wards, respectively. As JICA Expert Team (JET) observed, CIs in these areas have been taking the leading roles in collecting data concerning SWM, removing dust bins, cleaning the surroundings of containers, giving instructions to CUWG members training of cleaners, organizing safety and sanitation committees, improving conventional collection system and maintaining cleansing tools and equipment. They have become capable enough to think and act to change and improve their collection systems.

b) Issue:

Further activities for improving waste collection should be carried out by WMD with strong initiative of the 18 CIs.

3.4 Periodic maintenance for 127 vehicles is carried out.

Baseline	Target	Attainment
* More than half of repair works took 250 days or more. * Operation rate of collection vehicles was estimated at around 80%.	* 127 collection vehicles are operated with periodical maintenance.	* Workshop constructed through EGAP have been functioning since November 2010.. * 61 vehicles out of 127 are operated and maintained properly.

a) Status:

The targeted figure of 127 vehicles derived from 27 waste collection vehicles provided by the Amin Bazar Project implemented with the Japan Debt Cancellation Fund (JDCF) and 100 vehicles provided by the EGAP. For the 27 vehicles from the Amin Bazar Project, they have been regularly maintained by the Collection and Transportation Section of WMD. The workshop constructed by EGAP has been functioning since November 2010 with minimum staffs. Only 50 out of 100 vehicles from the EGAP have been operated and maintained at the new workshop as of mid-January 2011.

b) Issue:

Operation of CNG-driven vehicles has just started because DCC has not yet secured drivers. Though minimally required staff for the new workshop constructed by the EGAP are temporally assigned, the workshop is yet to be fully operational because some machines and tools are not yet provided due to the delay of procurement procedures.

It is an urgent requirement for DCC to take necessary steps, staff allocation, for full operation of the rest of the vehicles and the workshop equipment and tools provided by the EGAP.

3.4 Output 4: Capacity for operation and management of final disposal is improved

Attainment of Objectively Verifiable Indicator (OVI)

Output 4 - Capacity for operation and management of final disposal is improved.

4.1 Required staff for O&M of landfill is allocated and works properly since July 2008 in Matuail.

Baseline	Target	Attainment
* Required staff was not allocated properly in Matuail.	* Required number of staffs is allocated according to WMD organogram. * Operation and maintenance of Matuail Landfill are performed properly according to Landfill Operation Manual.	* Minimum number of staffs (Landfill Management Unit; LMU) was temporarily arranged. * Not yet posted according to WMD organogram. * Most of operation and maintenance are performed adequately by LMU

a)Status:

Necessary minimum numbers of staffs of LMU have been temporarily arranged at the Matuail Landfill Site to operate the landfill site appropriately. Though DCC has nominated an Assistant Engineer in charge for site management of Amin Bazar Landfill, staffs for the sanitary landfill management of Amin Bazar Landfill are yet to be designated. Requisite staffs have not been posted yet according to the WMD organogram. In addition, the Executive Engineer of WMD, responsible for managing the two landfills has not been selected, and there is a shortage of number of Sub-Assistant Engineers.

DCC has been allocating yearly two crore taka budget for landfill operation since 2008 and LMU has been utilizing the budget to operate the Matuail Sanitary Landfill Site smoothly.

b) Issues:

It is highly needed to permanently allocate of appropriate number of staffs for proper operation of the two sanitary landfills.

4.2 Environmental parameters are monitored as per Environmental Management Plan (EMP) since July 2008 at Matuail.

Baseline	Target	Attainment
* Environmental parameters were not monitored. * Construction works at Matuail landfill site had not yet been completed.	* Environmental parameters are monitored according to EMP regularly.	* Measurements Landfill gas, leachate are conducted quality and surface water quality by using the simple measuring instruments * Environmental parameters will monitor according to draft EMP this year.

a) Status:

Using simple measuring instruments provided by JICA during 2007, LMU has been carrying out environmental monitoring around once every two months. During the environmental monitoring EC (electrical conductivity), PH, COD (chemical oxygen demand), T-N (total nitrogen) of leachate and surface water and CH_4, H_2S, O_2, CO of landfill gas have been measured.

In 2009, environmental monitoring based on draft Environmental Monitoring Plan (EMP) was carried out by a research project of the Soil and Environment Science Department of Dhaka University. LMU has secured budget for environmental monitoring this year and will carry out environmental monitoring in accordance with EMP.

Attainment of Objectively Verifiable Indicator (OVI)

b) Issues:

Environmental monitoring as per EMP of the Matuail Landfill has to be followed on a regular basis by an expert laboratory.

4.3 Waste placing, compaction, soil covering on waste and slope maintenance are operated adequately as per Operation & Maintenance (O&M) manual.

Baseline	Target	Attainment
* Construction works at Matuail Landfill Site had not yet been completed. * None of the City Corporations in Bangladesh had the experience to operate sanitary landfill.	* Waste placing, compaction soil covering and slope management are operated as per O&M manual.	* Waste placing, compaction soil covering and slope management are being operated. * Problem has been found with container carrier drivers unloading waste on emergency platform and roadside.

a) Status:

Even though LMU is tempory staffs and minimum number of staffs, LMU has been performing waste placing, compaction and slope management almost properly according to O&M manual.

Considering the high cost of fresh soil for daily soil covering, at the beginning of sanitary landfill operation, LMU decided to use old waste as daily soil covering material. However, while LMU used old waste for daily soil covering during the wet season, it became very muddy. Hence, they have decided not to carry out daily soil covering during the wet season, as it may not be fruitful.

As DCC prepared the plan of use of steel plates and temporary drainage in advance and worked accordingly. Operation of the wet season has been improved since the 3rd JFY.

b) Issues:

Waste collection vehicles, specially container carrier, are unloading waste on the emergency platform and roadside without obeying instructions of the dumping instructors, and are creating problems.

Even though situation regarding drivers has been improved by the instruction from Project Team gradually, cooperation from Transport Department should be reinforced furthermore.

4.4 Leachate is treated adequately as per O&M Manual.

Baseline	Target	Attainment
* Construction works at Matuail Landfill Site had not yet been completed. * None of the City Corporations in Bangladesh had the experience to operate sanitary landfill.	* Leachate is treated per O&M Manual.	* Leachate is not treated adequately due to limitation in electricity use

a) Status:

To determine the necessary time for aeration, dissolved oxygen (DO) was measured using the instrument. The result implies that the necessary aeration time to be more than eight hours per day. Due to limitations of electricity use, DCC has been performing aeration for six hours, and the quality of treated leachate is not improved as planned. Hence, tricking filter and reed bed has been introduced as pilot project to improve the quality of treated leachate after aeration treatment. If the result of the pilot project is positive, then these treatment processes will be added after aeration treatment in future.

Attainment of Objectively Verifiable Indicator (OVI)

b) Issue:

DCC has to extend the aeration time to improve the leachate quality. However, high expense of electricity for the aeration is raising question of efficiency of the present system. It is necessary to introduce a cheaper system together with the existing system to lower the treatment expense.

4.5 Weighbridge is operated and data are provided regularly to WMD Headquarters.

Baseline	Target	Attainment
* Construction works at Matuail Landfill Site had not yet been completed. * Weighbridge was not installed yet.	* Weighbridge is operated smoothly and the data are provided to WMD Headquarters regularly.	* Weighbridge has been operated. * Problem has been found with frequent power failures and some collection vehicles bypassing the weighbridge.

a) Status:

Although the weighbridge has been operated since October 2007 at Matuail, sometimes the data is incomplete due to frequent power failures and some drivers bypassing the weighbridge. LMU has submitted operation data of weighbridge to WMD Headquarters regularly. Weighbridge operators count the number of vehicles bypassing the weighbridge. DCC has estimated total amount of waste transported to the landfill, assuming the loading rate of the bypassing vehicles as same as average of the loading rate per unit weighed at weighbridge.

b) Issue:

It is necessary to improve the precision of data for better planning and management of solid waste with cooperation of Transport Department. As installation of weighbridge at Amin Bazar Landfill has been completed, operation of the weighbridge and data provision to WMD Headquarters have to be done promptly with use of experience in Matuail landfill site.

3.5 Output 5: Capacity for financial management on solid waste management is improved

Attainment of Objectively Verifiable Indicator (OVI)

Output 5 - Capacity for financial management on solid waste management is improved.

5.1 Annual financial report of each financial year is available in September next financial year by the end of the Project.

Baseline	Target	Attainment
* SWM cost was tentatively estimated by JICA Study Team that was presented in Clean Dhaka Master Plan. * Annual cost estimate conducted in the follow-up stage of the development study could not cover the entire SWM-related expenditures.	* Annual financial report is available by September of next financial year.	* Annual financial report is available by September of next financial year. * More precise analysis on financial data is required.

a) Status:

1) SWM cost and revenue data has been collected, input and periodically reported since financial year (FY) 2006/07.
2) Inventory of SWM-related fixed assets has been developed, from which the depreciation cost has been calculated and reflected in the SWM cost from FY 2008/09.
3) All zones and SWM-related departments have been much cooperative since the beginning of the Project, which enables the financial management group to collect data smoothly.

b) Issues:

1) More precise cost analysis should be led by Budget Officer of WMD.
2) Difficulties in continuous data collection of SWM-related newly acquired and written-off fixed assets are still remained.
3) Some costs of WMD and other SWM-related department are yet overlooked some costs though not significant figures.

5.2 Reports for financial planning are prepared in each financial year by April by the end of the Project.

Baseline	Target	Attainment
* Budget proposals are made without any annual activity plans and proper cost estimate.	* WMD annual budget is prepared by April in every year.	* WMD Budget Committee was established and the procedure and schedule for budget preparation work have been modeled. * FY 2010/11 WMD budget was prepared. * FY 2011/12 WMD budget preparation work will start in February 2011.

a) Status:

1) WMD Budget Committee drafted the procedures and schedule for FY 2010/11 WMD budget preparation work. This will be a model for coming years' work.
2) Workshop regarding WMD budget preparation for COs of 10 Zones, WMD Headquarters and others SWM-related department was carried out with the participation of the Accounts Department staff.

Attainment of Objectively Verifiable Indicator (OVI)

b) Issues:

Unless sufficient recruiting of staffs and full function of WMD overall SWM operation-wise budget formulation cannot be attained. Staffing to WMD should be promoted.

5.3 Monthly reports on actual expenditure are available by the second week of next month by the end of the Project.

Baseline	Target	Attainment
* Data collection for monthly reporting is conducted at follow-up stage of the development study.	* Monthly reports on actual expenditure are available by the second week of next month	* Monthly reports on actual expenditure and revenue are available by the second week of next month in case of no delay in collecting data.

a) Status:

Monthly reports are timely prepared.

b) Issues:

The difficulties to collect the data from the SWM-related departments sometimes impede the timely preparation.

5.4 Control of expenditure for solid waste management is improved.

Baseline	Target	Attainment
* Staffs of Conservancy Department are not involved in procurement, so that they do not know how to make financial proposals and how to procure goods and services.	* Staff of zones including community SWM group can disburse the approved community SWM budget.	* Distribution of approved amount of community SWM budget is under discussion in WMD Budget Committee and zones based on the distribution request data from each zone.

a) Status:

For this activity, the bottom-up budgeting has been conducted from FY 2010/11 budget involving zone staff through workshop and meeting. An amount of 45lak is allocated to WMD for community SWM budget in FY 2010/11. The zone-wise distribution of allocated TK. 45 lakh is under discussion.

b) Issue:

The distribution to each zone must be decided based on the scientific proposal of each zone. However, the proposal of community SWM budget have not been planned and estimated scientifically by zones yet. More training and practice are still needed in this regards. The execution should be checked and monitored according to the DCC rules. Some guidance on DCC rules is necessary to zone officers.

Chapter 4 Records of Activities

4.1 Activities of Ward-Based Approach

4.1.1 Objectives, Concept and Outline of Ward-Based Approach

Collection and Transportation in DCC is composed of primary collection and secondary collection. Primary collection means that waste generator, such as residents and business entities bring directly their wastes to container or dustbin designated by DCC or PCSP delegated by the generators take the wastes from the generators to the container or the dustbin. On the other hand, DCC's waste collection vehicles take the wastes from the containers and the dustbins to the landfill sites. Beside the collection works, cleaners under management of WMD take the wastes generated by the road sweeping and drain cleaning to containers or dustbins. Ward is the smallest administrative unit of Dhaka City. Conservancy Inspectors (CI) of respective wards supervise and manage the work. Issues on SWM is depending on each area and the countermeasures against the issues are up to the area.

JET and DCC had discussed following matters at the beginning of the Project in consideration of the current situation of waste collection and transportation and four years of project period:

- Who were the stakeholders for capacity development?
- How to implement this Project?
- How this Project could be made sustainable?

1) Target Stakeholders for capacity development

As for the capacity development on SWM, capacity development for personnel is essential. Furthermore, capacity development at organization level is also very important. , capacity development at social and institutional level is also an important element. Target stakeholders have been the DCC's staffs who would become members of WMD; Chief Waste Management Officer (CWMO) and managers, Conservancy Officers (COs), Conservancy Supervising Inspectors (abolished at present), CIs, engineers, drivers, as well as residents who discharge wastes.

2) How to Conduct this Project

Usually main methodology of capacity development consists of lectures and training, etc. In consideration of the large number of target stakeholders, we designed this Project to develop the capacity of the stakeholders to learn through actual experience as on-the-job-training (OJT).

Besides, JICA Expert Team (JET) also learned the customs, culture and the practices in the local areas through the WBA activities. There are different life styles in Dhaka, and therefore DCC and JET could not standardize the activities to harmonize with the local situations of each of the target areas.

3) How to Make this Project Sustainable

To carry out the Project smoothly and to make it sustainable, it goes without saying that powerful leadership is necessary. It is also essential for the Project's sustainability that foundation on which Project activities take root should be built. The foundation would allow for the target persons to solve problems by acquired experiences through implementation of the activities. And finally the Project could be sustainable. JET therefore adopted and followed the idea into the Project. JET has always considered how the target persons could implement their activities with self-confidence and pride.

During the discussion mentioned above, it was necessary that 1) Strengthening SWM through intensifying resource inputs in some targeted areas, 2) Promoting decentralizing of DCC and strengthening ward level SWM by CI, 3)Developing ownership and cooperation on primary and secondary collection among stakeholders, such as WMD including CU, PCSP and community. As a result of the discussion, WBA whose components are shown in below was created and developed as one of the main activities of the Project.

- WBA1: Strengthen Ward SWM Offices
- WBA2: Improve DCC cleaners working conditions

- WBA3: Promote Community Participation in SWM
- WBA4: Improve the secondary collection service

(2) Outline of WBA Activities

1) Components of WBA

WBA components are shown in the below table.

Table 4.1-1 Components of WBA

WBA 1	**Strengthen Ward SWM Offices**
Activities: (1) Construct and renovate Ward SWM Offices (2) Strengthen functions of Ward SWM Offices	
WBA 2	**Improve DCC cleaners working conditions**
Activities: (1) Provide safety gears to cleaners (2) Organize Safety and Sanitation Committees (SSC) (3) Use cleaners' work manual	
WBA 3	**Promote Community Participation in SWM**
Activities: Promote community participation in SWM. • Conduct surveys on present condition (esp. existing community organization) • Hold kick-off meeting • Select Community Units and organize Community Unit Working Groups (CUWG) • Train CUWG members • Formulate and implement Community Action Plan (CAP)	
WBA 4	**Improve the secondary collection service**
Activities: (1) Introduce new collection system for compactors (2) Improve conventional collection system	

Wastes discharged from households are basically taken to DCC's containers or dustbins by PCSPs. DCC allocates the waste collection trucks to transport the wastes from the dustbins and containers to the final disposal sites. DCC also employs cleaners to clean public streets and drains and to bring the wastes to the containers or dustbins. SWM service and scope of WBA components is depicted in the following Figure.

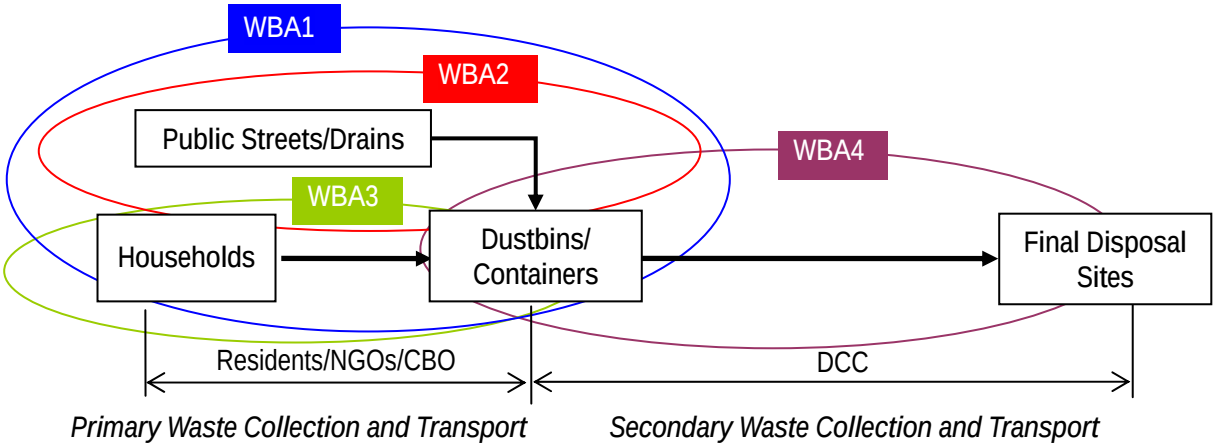


Figure 4.1-1 SWM Services and relationship with WBA

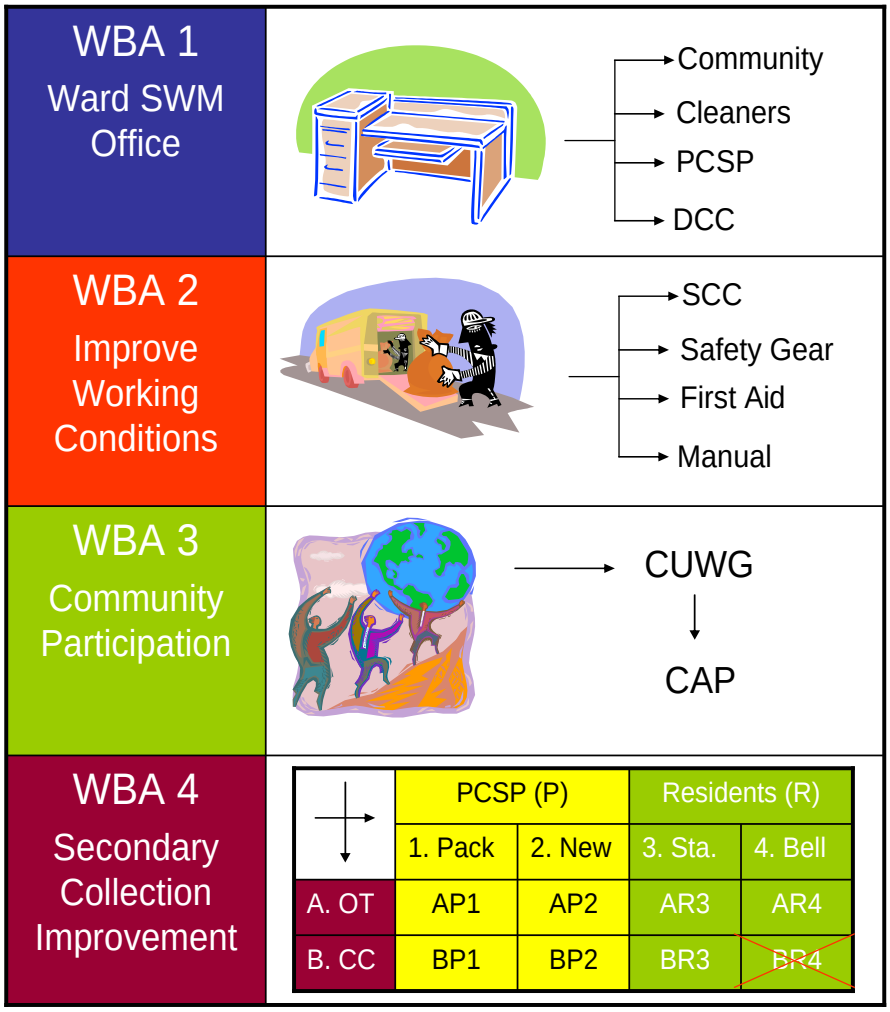


Figure 4.1-2 Schematic Representation of WBA Components

The WBA booklet has been prepared with the objective of disseminating WBA activities among personnel of DCC counterparts.

2) Input of WBA Activities

Process of WBA activities and inputs are summarized in the following table.

Table 4.1-2 Outline of WBA

1. Approaches to improve SWM services	WMD Directives outlines the required activities to improve SWM services. Based on the Directives, specific approaches will be implemented having the following objectives: 1. Institutional strengthening of DCC SWM 2. Improvement of working conditions of cleansing workers 3. Coordinated efforts for provision of efficient SWM service by DCC and cooperation of communities for improved SWM 4. Improve efficiency of DCC equipment use (more trips per shift and more waste amount transported)			
2. PDM Activities related to WBA	1-2 To strengthen Waste Management Department Human Resources and Institution 2-2 To organize community people and support community level SWM activities 2-6 To coordinate among community people, primary collection service providers and DCC	1-2 To strengthen Waste Management Department Human Resources and Institution 3-2 To plan and design collection and transport system 3-4 To train technicians, repair mechanics, drivers, cleaners, and other workers	1-2 To strengthen Waste Management Department Human Resources and Institution 2-2 To organize community people and support community level SWM activities 2-5 To organize awareness raising programs and environmental education programs in target wards 2-4 To support primary collection service providers to improve their services 2-6 To coordinate among community people, primary collection service providers and DCC	1-2 To strengthen Waste Management Department Human Resources and Institution 2-4 To support primary collection service providers to improve their services 2-6 To coordinate among community people, primary collection service providers and DCC 3-1 To monitor daily operation of collection and transport system and improve collection efficiency through suitable equipment allocation and dispatch and improved collection systems 3-2 To plan and design collection and transport system

3. Approaches	1A	1B	2A	2B	2C	3	4A	4B
	To provide Ward Offices through new construction or renovation of existing offices	To strengthen ward office function	To provide Safety Gears	To organize Safety & Sanitation Committee	To introduce "Cleaners' Manual" and re-organize work methods	To support community activities through organizing CUWG and WSWMC	To introduce new collection system	To improve conventional collection system
4. Groups to implement the approaches	Team for Ward-Based Approaches: WBA Team (Group1, Group 2, Group 3)		WBA Team (mainly Group 3)			WBA Team (mainly Group 2)	WBA Team (mainly Group 2 and Group 3)	
5. WBA Implementation	1. WBA Team; (1) Leader : Project Coordinator (DCWMO), (2) Team Members: from Groups 1, 2 and 3 and JET 2. Joint implementation between DCC and JET as follows:							
	1. Land for new offices → DCC 2. New construction and furnishing → DCC/ JET 3. Renovation works and furnishing → DCC/JET 4. Evaluation → DCC/ JET	1. WSWM system application → DCC 2. Evaluation → DCC/ JET	1. Safety gear → JET 2. Distribute and manage → DCC 3. Evaluation → DCC/ JET	1. Set-up committee → DCC 2. Regular committee meetings → DCC/ JET 3. Evaluation → DCC/ JET	1. Public manuals → JET 2. Distribute/ explain manuals → DCC 3. Re-organize work method → DCC 4. Evaluation → DCC/ JET	1. Devote CI time → DCC 2. Arrange community meetings → DCC/JET 3. Arrange explanatory materials → DCC/JET 4. Other community activities → DCC/JET	1. Prepare plan → DCC/ JET 2. PR activities → DCC/ JET 3. Supply bins, bags, improved RV, new container → JET 4. Supply open trucks and container carriers, with crews → DCC 5. Activity truck monitoring and weighing → DCC 6. Evaluation → DCC/ JET	1. Prepare plan → DCC/ JET 2. PR activities → DCC/ JET 3. Implement → DCC 4. Evaluation → DCC/ JET

Table 4.1-3 Records of WBA activity

Approach	1A		1B	2A		2B		2C		3		4A			4B	4A+4B
	To provide Ward Offices through new construction or renovation of existing offices		To strengthen ward office function	To provide Safety Gears		To organize Safety & Sanitation Committee		To introduce "Cleaners' Manual" and re-organize work methods		To support community activities through organizing CUWG	CUWG Training	To introduce new collection system	Introduction of vehicles by EGAP		To improve conventional collection system	PCSP Training
	New Construction	Renovation		Distributed	Condition of Safety Gears	Year to Establish	Condition	Distributed	Condition				Type	Location		
Ward 1																
Ward 2													Compactor	1		
Ward 3																
Ward 4																
Ward 5			Continuing	5th FY	Remained very few	5th FY	OK	5th FY	Sometimes followed	4th FY	4th FY+ 5thFY	4th FY	Compactor	2	4th FY	4thFY + 5thFY
Ward 6				3rd FY	Finished	3rd FY	Not OK	3rd FY	Not followed							
Ward 7				5th FY	Remained a few	5th FY	Not OK	5th FY	Not followed						Armroll	
Ward 8				5th FY	Remained a few	5th FY	Not Ok	5th FY	Not followed							
Ward 9		4th FY		4th FY	Finished	4th FY	OK	4th FY	Sometimes followed							
Ward 10				5th FY	Small amount	5th FY	Not Ok	5th FY	Not followed							
Ward 11				4th FY	Finished	4th FY	Not Ok	4th FY	Not followed							
Ward 12				4th FY	Finished	4th FY	Not Ok	4th FY	Sometimes followed				Compactor	2		
Ward 13																
Ward 14				5th FY	Remained a few	5th FY	Not OK	5th FY	Not followed							
Ward 15																
Ward 16				4th FY	Finished	4th FY	OK	4th FY	Sometimes followed							
Ward 17																
Ward 18													Compactor	1		
Ward 19													Compactor	3	Armroll	
Ward 20				4th FY	Finished	4th FY	Not OK	4th FY	Not followed							
Ward 21																
Ward 22				5th FY	Small amount	5th FY	OK	5th FY	Partially followed	5th FY	5thFY	5th FY	Compactor	1	5thFY	5thFY (done)
Ward 23															Armroll	
Ward 24																
Ward 25																
Ward 26																
Ward 27																
Ward 28																
Ward 29				5th FY	Small amount	5th FY	OK	5th FY	Followed							
Ward 30				5th FY	Small amount	5th FY	Not OK	5th FY	Not followed							

Approach	1A		1B	2A		2B		2C		3	4A			4B	4A+4B
	To provide Ward Offices through new construction or renovation of existing offices		To strengthen ward office function	To provide Safety Gears		To organize Safety & Sanitation Committee		To introduce "Cleaners' Manual" and re-organize work methods	To support community activities through organizing CUWG	CUWG Training	To introduce new collection system	Introduction of vehicles by EGAP		To improve conventional collection system	PCSP Training
	New Construction	Renovation		Distributed	Condition of Safety Gears	Year to Establish	Condition	Distributed	Condition			Type	Location		
Ward 31															
Ward 32				5th FY	Small amount	5th FY	Not OK	5th FY	Sometimes followed						
Ward 33		3rd FY	Continuing	3rd FY	Finished	3rd FY	OK	3rd FY	Partially followed	5th FY	5thFY	5th FY	Compactor	1 Armroll	5thFY (done)
Ward 34														Armroll	
Ward 35														Armroll	
Ward 36		2nd FY	Continuing	2nd FY	Finished	2nd FY	OK	2nd FY	Partially followed	2nd FY	3rd FY+ 5thFY	3rd FY	Compactor	1 2nd FY, Armroll	4thFY + 5thFY (Done)
Ward 37															
Ward 38													Compactor	2	
Ward 39				4th FY	Finished	4th FY	OK	4th FY	Sometime followed	5th FY	5thFY			5thFY + Armroll	5thFY
Ward 40	4th FY			4th FY	Finished	4th FY	OK	4th FY	Partially followed	5th FY	5thFY			5thFY	5thFY
Ward 41													Compactor	1	
Ward 42		4th FY	Continuing	4th FY	Finished	4th FY	OK	4th FY	Not followed	4th FY	4th FY	4th FY (cancelled)			4thFY
Ward 43				4th FY	Finished	4th FY	Not OK	4th FY	Not followed				Compactor	2	
Ward 44		3rd FY	Continuing	3rd FY	Finished	3rd FY	OK	3rd FY	Not followed	3rd FY	3rd FY	3rd FY	Compactor	2 3rd FY	4th FY
Ward 45		3rd FY	Continuing	4th FY	Finished	4th FY	OK	4th FY	Partially followed	4th FY	4thFY + 5thFY	4th FY	Compactor	3	4thFY + 5thFY
Ward 46				4th FY	Finished	4th FY	Not OK	4th FY	Not followed						
Ward 47				4th FY	Finished	4th FY	Not OK	4th FY	Not followed						
Ward 48															
Ward 49				4th FY	Finished	4th FY	OK	4th FY	Partially followed	4th FY		4th FY	Compactor	5	4thFY
Ward 50	4th FY		Continuing	4th FY	Finished	4th FY	OK	4th FY	Sometimes followed	4th FY	5thFY		Compactor	2 4th FY	4thFY + 5thFY
Ward 51				4th FY	Finished	4th FY	Not OK	4th FY	Not followed						
Ward 52				4th FY	Finished	4th FY	Not OK	4th FY	Partially followed	5th FY	5thFY		Compactor	1 5thFY , Armroll	5thFY
Ward 53				4th FY	Finished	4th FY	Not OK	4th FY	Not followed	4th FY	4thFY + 5thFY	5th FY	Compactor	4 4th FY	4thFY + 5thFY
Ward 54				4th FY	Finished	4th FY	OK	4th FY	Few cleaners followed						
Ward 55				4th FY	Finished	4th FY	Not OK	4th FY	Not followed						
Ward 56				3rd FY	Finished	3rd FY	OK	3rd FY	Few cleaners followed						
Ward 57				4th FY	Finished	4th FY	Not OK	4th FY	Sometime followed				Compactor	3	4th FY
Ward 58		3rd FY	Continuing	3rd FY	Finished	3rd FY	OK	3rd FY	Sometimes followed						
Ward 59															
Ward 60															

[WBA Inputs to Each Ward]

Approach	1A		1B	2A		2B		2C		3		4A			4B	4A+4B
	To provide Ward Offices through new construction or renovation of existing offices		To strengthen ward office function	To provide Safety Gears		To organize Safety & Sanitation Committee		To introduce "Cleaners' Manual" and re-organize work methods		To support community activities through organizing CUWG	CUWG Training	To introduce new collection system	Introduction of vehicles by EGAP		To improve conventional collection system	PCSP Training
	New Construction	Renovation		Distributed	Condition of Safety Gears	Year to Establish	Condition	Distributed	Condition				Type	Location		
Ward 61																
Ward 62				4th FY	Finished	4th FY	Not OK	4th FY	Not followed							
Ward 63	3rd FY		Continuing	3rd FY	Finished	3rd FY	OK	3rd FY	Partially	3rd FY	3rdFY + 5thFY	3rd FY	Compactor	1	3rd FY	4thFY + 5thFY
Ward 64																
Ward 65				3rd FY	Finished	3rd FY	Not OK	3rd FY	Not followed							
Ward 66																
Ward 67																
Ward 68																
Ward 69	3rd FY		Continuing	3rd FY	Finished	3rd FY	OK	3rd FY	Not followed	3rd FY	3rdFY + 4thFY	3rd FY			3rd FY	4th JFY
Ward 70				4th FY	Finished	4th FY	Not OK	4th FY	Sometimes followed						Armroll	
Ward 71															Armroll	
Ward 72																
Ward 73																
Ward 74				5th FY	Few remained	5th FY	Not OK	5th FY								
Ward 75	3rd FY		Continuing	3rd FY	Finished	3rd FY	OK	3rd FY	Partially	3rd FY	3rd FY				3rd FY	4thFY + 5thFY (done)
Ward 76				2nd FY	Finished	2nd FY	OK	2nd FY	sometimes followed	2nd FY	3rdFY+4thFY+ 5thFY	2nd FY	Compactor	3	2nd FY	4thFY + 5thFY (done)
Ward 77																
Ward 78															Armroll	
Ward 79																
Ward 80																
Ward 81																
Ward 82																
Ward 83																
Ward 84	4th FY		Continuing	4th FY	Finished	4th FY	OK	4th FY	Followed but not all part	4th FY	4th FY+ 5thFY				4th FY	4thFY + 5thFY (done)
Ward 85			Continuing	4th FY	Finished	4th FY	Not OK	4th FY	Not followed							
Ward 86				4th FY	Finished	4th FY	Not OK	4th FY	Not followed							
Ward 87																
Ward 88																
Ward 89																
Ward 90																
Total	6	7		46		46		46		18	17	12		41	23	19

Source: JET

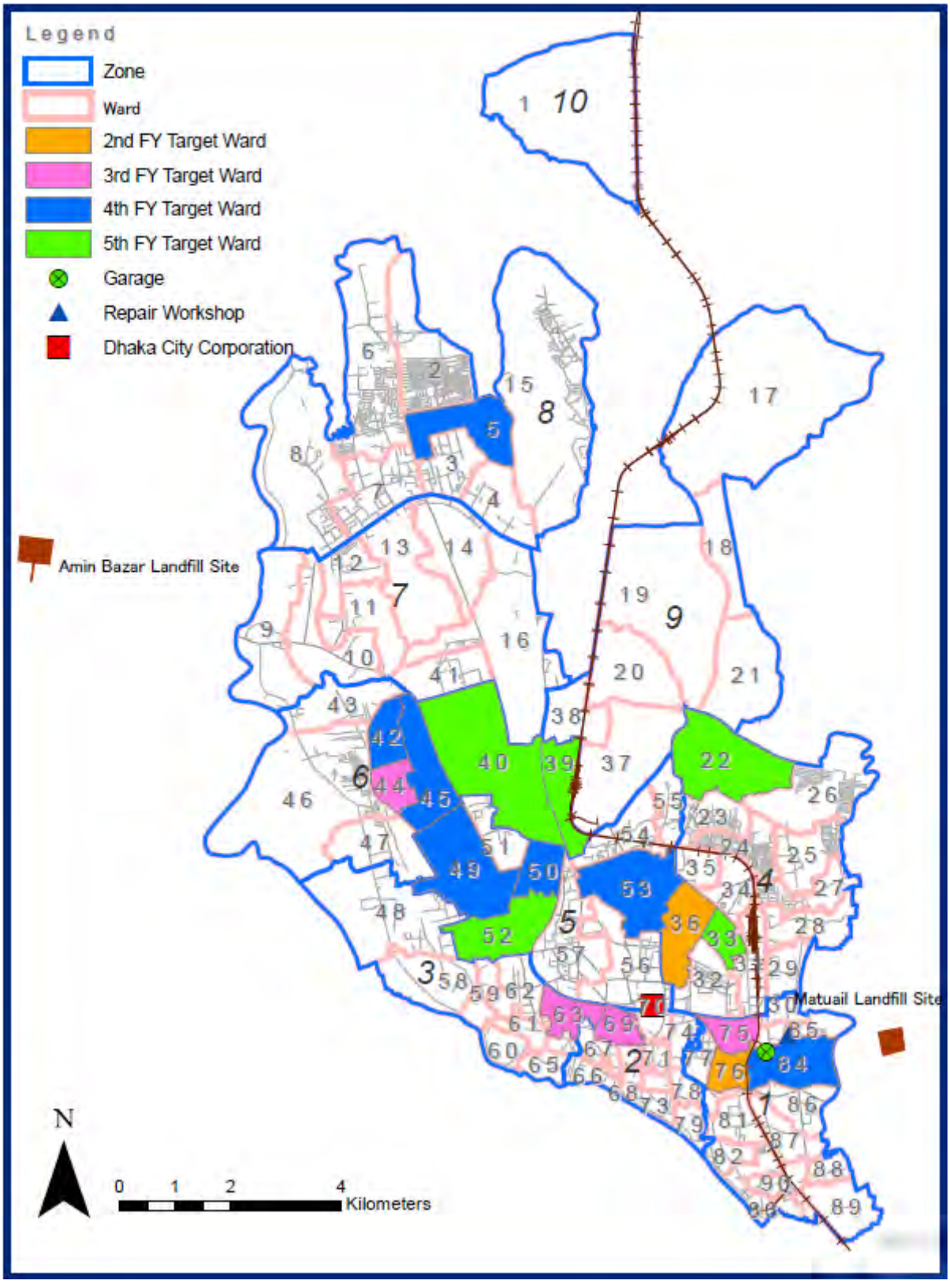


Figure 4.1-3 Map of Dhaka WBA implemented

2) WBA Booklet

WBA booklet showing the policy and way prepared to expand the activity through the actual practice.

(3) Organization for WBA

CI and CO actually implement the activities of WBA under management of WMD, however the management is not sufficient because of delay of staff allocation. WBA core group was established to support the insufficient management and coordinate the activities among wards. Member of the core group has been worked in the Project since the beginning and has developed their capacity. But personnel of WMD headquarters had not conduct continuous OJT sufficiently because of the delay of the staff allocation. It is necessary to strengthen the capacity development after the allocation.

4.1.2 WBA 1: Strengthening of Ward SWM

(1) Result of Activity

1) Expected Result

Expected result of WBA 1 was to construct Ward SWM Offices and to enhance the administrative ability of the office. WBA 1's target was that the ward office handles any kind of ward level SWM activities in each ward such as management of PCSP, dealing with complaints from residents and management of road sweeping and drain cleaning by cleaners. Strengthening administrative ability of ward office was also expected to reduce the work load of WMD Headquarters through the decentralization. In addition, it was aimed that CI would get confidence and respect from stakeholders through activities beside them..

2) Actual Result

DCC now has thirteen Ward SWM Offices in Wards 9, 33, 36, 40, 42, 44, 45, 50, 58, 63, 69, 75, 76 and 84. Out of them, DCC constructed two ward offices in Wards 40 and 84 by their own finance. Project Team tried to invite commissioners and residents to know the ward office to them at the opening ceremony. CIs had managed cleaners and treated complaints from residents at the ward offices.

<table>
<tr>
<td> 

Ward 9 (Sep. 2009)</td>
<td> 
Ward 33 (Aug. 2008)</td>
<td> 

Ward 36 (Jan. 2008)</td>
</tr>
<tr>
<td> 
Ward 40 (Feb. 2009, DCC Fund)</td>
<td> 

Ward 42 (Jul. 2009)</td>
<td> 

Ward 44 (Aug. 2008)</td>
</tr>
</table>


Ward 45 (Feb. 2008)


Ward 50 (Jul. 2009)


Ward 58 (Aug. 2008)


Ward 63 (Nov. 2008)


Ward 69 (Nov. 2008)


Ward 75 (Nov. 2008)


Ward 84 (Mar. 2010, DCC Fund)

Figure 4.1-4 Ward Offices Constructed/Renovated by the Project

When Residents complained to the respective Ward SWM Offices, CIs could quickly solve the problems. Relationship between CI and residents has been becoming closer through those activities. Previously, residents' complaints were directed to ward commissioners, which made the status of CIs weaker and more unreliable. However, now residents understand clearly where their complaints should be addressed to. As a result, CIs have received confidence from the residents.

Record keeping formats for ward office have been prepared and revised to enhance the function of the office, however application of the format had not yet completed.

(2) Good Practices, Problems and Feedback Identified

Good practices, problems and feedback to subsequent activities identified through the WBA 1 activities are shown in the following Table

Table 4.1-4 Good practices, problems and Feedback identified of WBA1

Good Practices for Successful Implementation	➢ All the offices were inaugurated by the DCC high officials with presence of the community, public representatives and JET members.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Motivation and ability of CI for WBA up to personnel, transferring CI to other ward effected the continuous of WBA activity. For example, in ward 69, the CO has taken the responsibility of running the ward office after the replacement of the CI there. As the CO is new, the ward office activities there has been delayed.
Measures Taken to Solve the Problems	➢ WBA meetings, WBA training, and Core Group meetings were periodically held to motivate concerned officials. It has contributed to develop their capacity. As a result of that, new lands for ward offices were acquired.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ Continuous and regular WBA meetings ➢ Continuous WBA training ➢ Continuous and regular Core Group meetings ➢ Instructions from WMD Headquarter and COs 2) Necessity for Reviewing Methodology ➢ It is necessary to revise the practice of the activity because the needs and functions is deveining on the area. 3) Necessity for Reviewing Expected Results None 4) Required Supports from Outside Groups ➢ WMD headquarters should support the construction and renovation of the ward office and conduct periodical monitoring to solve problems. ➢

4.1.3 WBA 2: Improvement of DCC Cleaners' Working Conditions

(1) Result of Activity

1) Expected Result

Cleaners had conducted their works under unsanitary condition without any protection and got traffic accidents at night work due to low awareness. WBA2 aimed to enhance their awareness on safety and sanitation and to create safety and sanitary work condition for cleaners through provision of safety equipment, establishment of SSC and holding workshop.

DCC cleaners had collected waste from roads without proper protection gears or guidelines for the work. In addition, their awareness on safety and sanitation was low. WBA 2 was expected to promote recognition amongst Dhaka City Corporation (DCC) cleaners on the importance for safe and sanitary condition as well as protection gears. It is also expected that work methods be developed through preparing and implementing the cleaners' guideline. WBA2 also aimed to raise motivation of cleaners by taking good care of them.

2) Actual Result

(a) Providing Safety Gears and Enhance Awareness

Cleaner's awareness has been enhanced through providing safety gears to the cleaners, such as gloves, masks, first aid kits and boots, through Cleaners' workshops. A DCC health officer participated in the Cleaners' Workshop and delivered a lecture to cleaners on health care and sanitary works. In addition, DCC standardized the procedure to supply medicines inside the first aid boxes when it is necessary to replenish.

Around 4,000 cleaners in 46 wards have received safety gears, as listed in the following Table through this Project since the 2nd Fiscal Year of Japan (JFY) of the Project.

Table 4.1-5 Number of Provided Safety Equipments Date of Distribution

	Ward	Mask (Pcs)	Gloves (Pair)	Cleaners Manual	First Aid Box	Register Khata for SSC
Jan. 30, 2008	36	460	115	115	1	
	76	308	77	77	1	N
Aug. 19, 2008	33	440	110	110	1	O
	63	240	60	60	1	T
Aug. 20, 2008	58	280	70	70	1	
	69	320	80	80	1	
Nov. 16, 2008	6	260	65	65	1	
	65	320	80	80	1	
	75	260	65	65	1	
	44	440	110	110	1	D
	56	560	140	140	1	
Mar. 2, 2009	53	420	105	105	1	I
	45	480	120	120	1	
	84	232	58	58	1	S
	40	428	107	107	1	
	49	396	99	99	1	T
July 9, 2009	9	280	70	70	1	
	42	500	125	125	1	R
	43	280	70	70	1	
	46	300	75	75	1	I
	51	340	85	85	1	
Jul.19, 2009	50	340	85	85	1	B
	52	320	80	80	1	
	54	280	70	70	1	U
	55	260	65	65	1	
	57	340	85	85	1	T
Oct. 19, 2009	32	520	130	130	1	
	62	320	80	80	1	E
	70	340	85	85	1	
	85	280	70	70	1	D
	86	280	70	70	1	
Oct. 20, 2009	11	300	75	75	1	
	12	260	65	65	1	
	16	280	70	70	1	
	39	640	160	160	1	
	47	340	85	85	1	
Jun.15, 2010	30	260	65	65	1	1
	74	440	110	110	1	1
	64	260	65	65	1	1
	22	340	85	85	1	1
	29	260	65	65	1	1
Jun. 16, 2010	10	280	70	70	1	1
	14	440	110	110	1	1
	5	300	75	75	1	1
	7	320	80	80	1	1

	Ward	Mask (Pcs)	Gloves (Pair)	Cleaners Manual	First Aid Box	Register Khata for SSC
	8	340	85	85	1	1
Total	46	15,884	3,971	3,971	46	10

Source: JET

(b) Organizing the Safety and Sanitation Committee (SSC)

It was commonly known that many cleaners faced accidents during the cleaning work. However, DCC had no detailed information. Furthermore DCC had not conducted surveys on the number of serious injuries or fatal accidents, although DCC had provided financial supports to families of dead cleaners. JET tried to acquire the information, however it was very difficult to obtain.

JET and DCC have promoted organizing Safety and Sanitation Committees (SSC) in the wards to protect cleaners' safety and health there. An SSC consists of a CI, a CO, cleaners and some community members. SSC members discuss topics as follows:

- Report accidents (traffic accident or injury) involving cleaners, analyze reasons why the accidents occur and discuss how to prevent such accidents in the future
- Discuss measures to prevent any potential accidents and unsanitary work conditions
- Discuss and request on safety and sanitary work



Figure 4.1-5 Concept on SSC

Under WBA 2, in principle, an SSC should be formed in the ward where the safety gears were provided. However, the actual results were sometimes not so active as expected. Many SSCs have yet to be organized. Furthermore, some of the formed SSCs have not been so active. It is very important for DCC to support the establishing SSC and strengthening the awareness on safety and sanitation. t.

(c) Introducing "Cleaners' Work Manual"

Objectives of the manual are 1) to standardize the cleaners' work, 2) to secure their safety during the work, 3) to improve their working condition to more sanitary ones, 4) to reduce risks, 5) to manage the emergency situation and to make sure there are prior announcement for taking leaves, etc. Cleaners' Worker Manual was tentatively prepared in 2007 and was distributed to cleaners of some wards through

the cleaner's workshops. Most of the cleaners were illiterate, and therefore the manual was revised with various illustrations. In addition, posters which described these illustrations were distributed to ward offices and posted on the notification boards of the ward offices.

So far, the manual has been distributed in 46 wards. Around 4,000 cleaners have received the manual. The components of the manual are shown below.



Warming up before starting the work



Wearing safety gear



Group work



Calling CI at the time of emergency



Washing after finishing the work



Reporting to CI at the end of the work

Figure 4.1-6 Components of Cleaner's Manual

Table 4.1-6 Components of Cleaner's Manual

Items	Description
How to start the work?	Every day before work, we have to warm up to make us fit to the work.
	Before start of the work, CI should instruct properly about the duties of the day
	Before start of the work, cleaners should wear the safety gears, apron etc., provided by JICA / DCC, to be properly protected from danger.
	Every day before start of the work, the equipments and tools used for cleansing work like hand trolleys, belcha, spades, brooms, etc., have to be examined.
How work in a good manner?	We have to work together as a team.
	For one road, 3-4 cleaners can work together as follows:
	- Some cleaners sweep the road
	-· One cleaner take the wastes into hand trolley
	In case of storm water drains, cleaners can also work as a team.
	-· One cleaner takes wastes from drain to basket.
	-· Another cleaner fills the hand trolley and bring to a dustbin or container.
	If one group finishes their work earlier they should help others.
	After finishing the work wastes must be filled inside the container/dustbins.
What measures needed to be	If some co-worker is sick he/she has to take rest
	If someone is hurt in field co-workers should help him/her

Items	Description
taken in case of sickness	
How to protect us from accident	On VIP road, a red flag can be shown to give drivers alert.
What steps should be taken to protect us from accident	Anytime an accident can happen.
	If someone fall into accident suddenly, CI should be called from the nearby phone booth as soon as possible
	CI should take initiative to take the wounded person to hospital
What we should do after work?	After the compilation of the work, everybody should clean his/her feet and mouth properly
	After the end of day's work should report to CI during attendance
	After the attendance CI should be informed about the problems regarding the equipments.
	After finishing the work equipments should be kept at store properly

(2) Good Practices, Problems and Feedback Identified

Good practices, problems and feedback to subsequent activities identified through the WBA activities are shown in the following Table

Table 4.1-7 Good Practices, Problems and Feedback Identified of WBA2

Good Practices for Successful Implementation	➢ ➢ One CI took initiative to refill the first aid materials and succeeded. He directly took medicine and materials from Store and Purchase Department with the help of the Health Department. The file was processed by CI, CO, Additional CWMO and CWMO of WMD. ➢ In many wards, cleaners work in groups. In the wards where VIP roads exist, group work is common which is an important instruction stipulated in the Cleaners' Work Manual. ➢
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Raincoat and apron were considered as important items for daily work of cleaners but it was not included in the safety gears. ➢ DCC has not set up strategy for refilling of first aid kit and frequent distribution of masks and hand gloves. ➢ Lack of awareness, old habits of cleaners, discomfort and rapid wearing out of safety gears have hindered their long run usage.
Measures Taken to Solve the Problems	➢ CWMO instructed WBA Core Group members and other concerned staff to process the file for obtaining the budget to purchase the safety gears. ➢ DCC allocated community SWM budget which might be used for WBA 2 in the future
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ WBA meeting, WBA training, Core group meeting should continue. 2) Necessity for Reviewing Methodology ➢ It was found that some cleaners had not applied the new way in accordance with the manual and not use the protection equipment because of their easy conventional way and custom. WMD headquarters should instruct and monitor them.
Feedback to Subsequent Activities	3) Necessity for Reviewing Expected Results ➢ It is not necessary to review the expected results but rather the reasons which contributed to these results should be reviewed. 4) Required Supports from Outside the Group ➢ WMD Headquarters may support so that from Store and Purchase Department of DCC safety gears and first aid box can be distributed and refilled.

4.1.4 WBA 3: Development of Community-based SWM and WBA 4: Improvement of the Secondary Collection Service

(1) Result of Activity

1) Expected Result

WBA 3 is a group of activities with expectation for developing a community-based participatory SWM, such as 1)establishing around five community units, 2)selecting some units as CUWG and holding Kick Off Meeting, 3)Problem analysis and preparation of social map, 4)preparation of CAP based on the analysis, 5)implementing the CAP by CI with support of WMD headquarters. Besides, WBA 4 is a set of activities with expectation for realizing the efficient and sanitary secondary collection. It is composed of two components; WBA 4A which is an introduction of a new collection system, in consideration of compactor introduction in future. WBA 4B is an improvement of the existing collection system, such as cleaning activity and waste collection along some narrow roads by new rickshaw-van developed by the Project and introduced along with improvement of container in terms of design and capacity.

2) Actual Result

As mentioned above, WBA 3 and 4 have been closely related to each other shown in the following Figure and therefore those activities could not be described separately. WBA 3 and 4 has been carried out in 18 ward as shown in below.

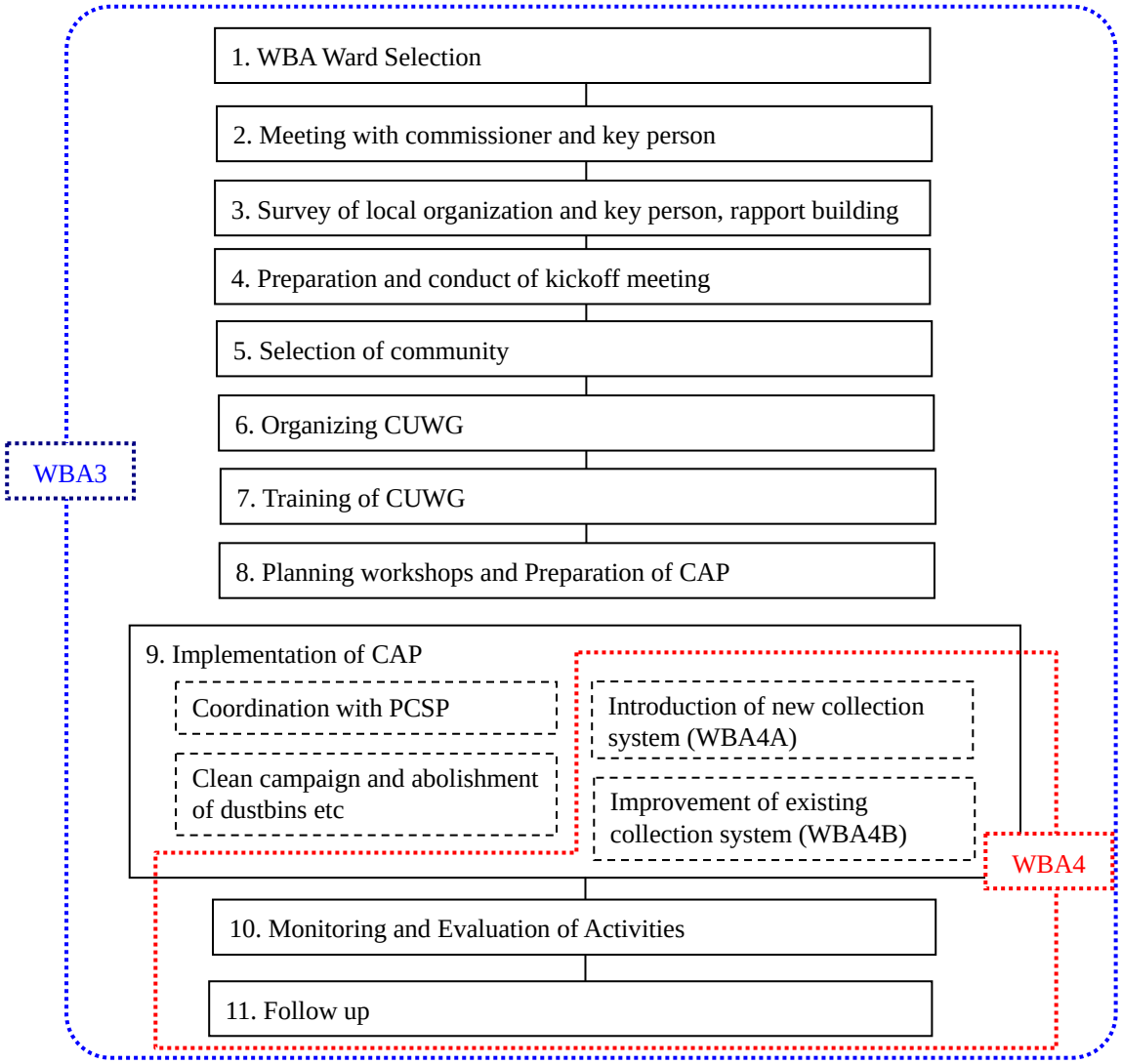


Figure 4.1-7 Relationship of WBA 3 and WBA 4

Activities of WBA 3 and 4 have been implemented in total 18 wards so far. Summary of the activities carried out at each WBA ward are shown below.

Table 4.1-8 Outline of WBA 3 & 4 in 18 Wards

	Kickoff Meeting	Organizing CUWG	CUWG Training	Problem analysis	Making CAP	Implementing CAP				
						Awareness rising campaign	Special cleaning	Introduction new collection system	Improvement of existing collection system	Others
W5	2009/08/01	Dec. 2009	2010/01/20	Done	Done	Rally, Sticker, leaflet and miking	Yes	Yes&Compactor	No	Cultural Program
W22	2010/07/17	July 2010	2010/10/30	Done	Done	Rally, Sticker, miking	Yes	Yes&Compactor	Yes	Community meeting
W33	2010/09/25	Sep. 2010	2010/10/30	Done	Done	Leaflet, miking	Yes	Yes&Compactor	Yes	Community meeting
W36	2007/09/01	Nov. 2007	3rd FY 2010/10/30	Done	Done	Rally, sticker, leaflet, miking, Environmental Education, door to door campaign	Yes	Yes&Compactor	Yes	Community Meeting
W39	2010/10/23	Nov. 2010	Planned in 5th FY	5th FY	5th FY	Planned in 5th FY	Not yet	Arm roll allocated	yes	Not Yet
W40	2010/07/03	Oct. 2010	Planned in 5th FY	Done (partly)	Not Yet	Not Yet	Yes	N/A	Yes	Community & PCSP meeting
W42	2009/08/29	Dec 2009	2010/02/13	Done	Done	Rally	Yes	Yes	Yes	CUWG, PCSP meeting
W44	2008/10/18	Oct. 2008	2008/03/13	Done	Done	Banner, leaflet, sticker, miking, mosque	Yes	Yes & Compactor	Yes	Community & PCSP meeting
W45	2009/07/04	Aug 2009	2010/02/13	Done	Partly	Rally, Environmental Education	Yes	Yes&Compactor	Yes	Environmental education
W49	2009/07/18	Sep 2010	Planned in 5th FY	Done	Done	Sticker, Leaflet, miking	Yes	Yes&Compactor	Yes	Cultural Program
W50	2009/08/08			Done	Done	Sticker, Rally	Yes	Yes & Compactor	Yes	-
W52	2010/07/10							Yes & Compactor		
W53	2009/07/11		2009/12/27	Done	Done	Sticker, Rally	Yes	Yes&Compactor	Yes	Cultural Program

	Kickoff Meeting	Organizing CUWG	CUWG Training	Problem analysis	Making CAP	Implementing CAP				
						Awareness rising campaign	Special cleaning	Introduction new collection system	Improvement of existing collection system	Others
W63	2008/07/19	Oct. 2008	2008/02/20	Done	Done	Rally, sticker, leaflet, miking, Environmental Education, door to door campaign	Yes	Yes & Compactor	Yes	-
W69	2008/06/28	Oct. 2008	2008/01/23 2009/12/26	Done		Rally, sticker, leaflet, miking, Door to door campaign	Yes	Yes & Trial by OT	Yes	-
W75	2008/08/09	Oct. 2008	2009/02/14 2010/09/24	Done	Yes	Rally, sticker, leaflet, miking, door to door campaign	Yes	N/A	Yes	=
W76	2007/11/24	Dec. 2007	2009/2/14 2009/12/26 2010/09/24	Done	Yes	Sticker, leaflet, miking, door to door campaign	Yes	Yes&Compactor	Yes	Cultural Program
W84	2009/08/22	2009/10/10 2010/09/24	2009/10/10	done	Done	Rally, sticker, leaflet, miking, Environmental Education, door to door campaign	Yes	N/A	Yes	Cultural Program

Source: JET

(2) Good Practices, Problems and Feedback Identified

Good practices, problems and feedback to subsequent activities identified through the WBA 3and 4 activities are shown in the following Table.

Table 4.1-9 Good Practices, Problems and Feedback Identified of WBA3, 4

Good Practices for Successful Implementation	Community meetings, PCSP meetings, WBA meetings, Core Group meetings have been held with frank discussions which are well facilitated by CWMO, CIs, COs., SEs, EEs, AEs and JET members. Sound relationship and coordination among community, PCSP and WMD was established. Community & PCSP have played significant roles to make both WBAs successful. For example, they have participated in WBA activities, spending time and money, and making efforts as group, etc. ➢ CAPs have been implemented with a variety of activities such as rally, miking, environmental education, cultural (music event) program, reduction of illegal dumping, joint special cleaning program of DCC cleaners and community people and improve primary and secondary collection services of PCSP and DCC respectively. Dustbins have been demolished and open dumping points have been reduced. ➢ Excellent planning has ensured the stakeholders' participation to decide station, method, vehicle requirement, required capacity of vehicle, timing of vehicle dispatch, etc. As a result, fix-time and station collection system has been introduced with stakeholder's corpertion.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Due to traffic congestion, open trucks and compactors sometimes can not arrive to the station on time and PCSPs have to wait with rickshaw vans full of waste. Traffic congestion in Dhaka would not be solve easily, however CI tried to ease the problem through close communication and coordination among communities, driers and PCSP. ➢ CIs are facing difficulties where PCSPs are making more than two trips and consequently there are left over wastes and increasing number of rickshaw vans by PCSP Project team did not select the areas for new collection, basically. ➢ There are midnight waste generators. For example, not all restaurants and community centers are following the schedule yet. It is a hard job for CIs to ask them repeatedly even if PCSPs and community supports. ➢ T
Measures Taken to Solve the Problems	➢ WBA meeting, Core Group meeting and discussion meetings among related stakeholders within the WMD and outside of WMD has been promoted, because most of the problems were caused by the lack of the mutual coordination and understating among them.

Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ None 2) Necessity for Reviewing Methodology ➢ The process of community SWM defined in the guidelines that have contributed to the WBA 3 should be periodically reviewed and revised based on actual situation. ➢ It is also necessary to review methods or strategies of work under WBA 4A and 4B aiming to ease and promote monitoring, quick feedback when the vehicle breaks down, expansion of compactor operation for commercial (restaurants, shops and community centers) waste collection, standard loading with taking operation life span into account, i.e., operational life vs. loading amount). 3) Necessity for Reviewing Expected Results ➢ None 4) Required Supports from Outside the Group ➢ Support from landfill group is helpful in terms of weighbridge usage with a purpose that all vehicles arriving at the landfill use the weighbridge for analysis of waste collection efficiency.

4.1.5 Relation with Environmental Grant Aid Program (EGAP)

It is the high prioritized to enhance capacity for wastes collection in this project. However, many of the existing vehicles were decrepit and there were no prospect to purchase new vehicles in line with the master plan even DCC were increasing budget for purchasing the vehicles. Necessity of a General Grant Aid Project for provision of the vehicle was considered from the viewpoint of OVI for project purpose which both of soft and hard component is necessary to achieve. 100 vehicles were procured and the vehicles has been introduced gradually.

Table 4.1-10 Waste Collection Vehicles provided by EGAP

Type	Capacity	Unit
Arm roll	7 ton	20
Compactor	5 ton	20
Compactor	2 ton	15
Container carrier	5 ton	30
Container carrier	3 ton	15
	Total	100



Arm roll



Compactor



Container carrier

Figure Vehicles procured through EGAP

It was planned that arm roll trucks would be introduced areas where many containers are located such as market. Containers of arm roll truck are bigger than existing ones, and the number of containers would be reduced because of introduction of arm roll trucks. The compactors were planned to used as

replacement of container carriers and open trucks. Finally, it was assumed that container carriers would be replaced the existing ones. The designed capacity of the EGAP vehicles is assumed more than 1,000 ton /day. It was expected to improve the collection ration of DCC after the introduction of the vehicles. the introduction . Even though WMD has tried to introduce the vehicle as soon as they can, it take longer time than expected bue to low corporation from Transport Department which drivers belong in Besides, current situations of introduced vehicles are below.

Table 4.1-11 Current situations of introduced vehicles

Type	Capacity	Plan	Actual	Basic strategy of preparation for introduction	Result	Difficulties and problems after introduction
Arm roll	7t	20	16	・Prioritized large waste generator like markets ・Select the strong paved road that can be container work. ・Planning not to be over loading ・Select the place where can drain.	・Improving collection efficiency by removing the trailer. ・It becomes easy to control unloading work in landfill sites. Besides, loading becomes more safely because it does not need to use slope like trailers. ・Removing containers made landscapes clean.	・Need considerations if paved road are too weak to work containers. ・Need the precaution that avoid over loading into containers. ・Need devise for way of drainage because actual drain spots are 2 places.
Compactor	5t	20	18	・Prioritized housing areas and places that are removed containers. ・Finding users of containers and survey for exhausting time. ・Placing stations for switching from containers collection to fixed time and fixed place collection ・Decided the way of loading wastes to compactors. ・Explanation to PCSP for way of loading wastes to compactors, ・Safety workshop to drivers and cleaners on compactor operation ・Providing uniforms to cleaners for compactors. ・Requesting to residents to cooperate fixed time and place collection. ・Placing signboards at stations.	・Collection efficiency were improved by fixed time and fixed place collection. ・Without using containers and dustbins makes the places clean. Collection working became more sanitary. ・It leads image improvement of SWM. ・It leads confidence of cleaners.	・It needs appropriate way of collection and loading because Dhaka city apply primary ・No awareness and system for residents to cooperate wastes collection ・It is hard to get cooperation from cleaners and drivers unions for SWM and line up cleaners is difficult. ・Low awareness of safety of drivers and cleaners. ・In some places take much time to load wastes. Modifying 2 cleaners per compactor is needed. ・Monitoring systems are needed.
Compactor	2t	15	9			
CNG Container career	5t	3	0	・Replaced existed container careers. ・Preparation for re-deployment and maintenance of the removed containers.	・New containers made surrounding places clean ・Improving images of SWM by new vehicles.	・CNG vehicles prevent from corruptions about costs of fuels So DCC is negative to introduce them.
Container career	3t	15	1			
Workshop construction				・Secure the engineers ・Training for engineers.	・Maintenance for CNG can be done. CNG	・It needs sufficient skills for staffs.

4.2 Activities for Output 1

4.2.1 Activity 1.1: To establish Waste Management Department (by DCC)

(1) Result of the Activity

1) Expected Result

This activity was added when the Project Team revised the Project Design Matrix (PDM) from Version 0 to Version 1. Preparatory Study Team expected that "Waste Management Department (WMD) was approved by the Government of Bangladesh" before the start of the Project as a precondition. The Project was designed for capacity development of staff of WMD as core aim of the Project.

2) Actual Result

The precondition had not been satisfied by February 2007 when the Project started. Before commencement of activities in July 2007, DCC, JICA Expert Team (JET) and JICA Advisory Committee discussed whether the Project should start activities or not even before the WMD had not been established, and concluded that even before the establishment the activities should start with conditions that DCC should make the utmost effort to establish WMD and arrange for full-time and part-time DCC Counterpart (C/P) for the implementation of the activities. For the establishment DCC took the following processes, with support from JET and JICA Bangladesh Office.

- In June 2007, DCC has submitted a proposal for overall reform of DCC including establishment of WMD to the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C).
- In August 2007, DCC modified and re-submit the overall reform proposal to MoLGRD&C).
- In April 2008, DCC submit a proposal for establishment of WMD separately from the overall DCC reform upon request by JICA Bangladesh Office as the overall reform might take too long time.
- In May 2008, MoLGRD&C sent the proposal for establishment of WMD after its own approval to the Ministry of Establishment (MoE).
- In June 2008, MLGRD&C send the proposal after the approval of MoE to the Ministry of Finance (MoF).
- In July 2008, Monitoring Cell of MoF approved the proposed posts of WMD.
- In August 2008, upon the approval by MoF, JET assisted DCC for holding WMD Launch Event. In the event Directives of WMD was publicized to the citizens.
- In October 2008, Implementation Wing of MoF issued an order to MoLGRD&C regarding salary scale of staff of WMD, and MoLGRD&C request DCC to abolish some posts according to guidelines issued by MoF.
- In January 2009, DCC send requests to MoLGRD&C; one to abolish some posts and the other to revised the salary scale of WMD staff. In turn MoLGRD&C send those requests to MoF and MoF agreed with the requests.
- In May 2009, MoLGRD&C issued an order to establish WMD

After the order for the establishment from MoLGRD&C, JET recommended DCC to set-up a task force to prepare staffing, and asset and budget transfer to WMD. However, DCC decided that staffing should be carried out first, and asset and budget transfer should follow because without staffing preparation of asses and budget transfer might not proceed due to resistance by related departments of DCC. Though a taskforce meeting was held in December 2009 chaired by CEO at the time, the staffing did not proceed prominently due to change of the CEO.

Besides, JET requested arrangement convenient for continuation of the Project before start of 3rd JFY. In response, DCC issued a Office Order in June 2009 to deploy full-time key 13 persons to WMD, of which 9 were in-charge and 4 were permanent assignment. Despite the order, a few persons had to work for existing posts in parallel and another few persons had to work actually for other jobs.

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.2-1.

Table 4.2-1 Good Practices, Problems and Feedback Identified of Acitivity 1.1

Good Practices for Successful Implementation	➢ Some CEOs of DCC were active for the establishment and staffing. ➢ Executive Engineer (Collection and Transport) (in charge) of WMD, beside his duties, has worked eminently for preparation of necessary documents for establishing and staffing to be submitted to MoLGRD&C.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Some CEO did not work actively for staffing to WMD. ➢ DCC staff did not know how to proceed the steps for establishment of a department and for staffing to WMD because DCC had never experienced establishment of a department and because government rules for staffing are very complicated. ➢ Some related departments have resisted against staffing to WMD.
Measures Taken to Solve the Problems	➢ JET proposed to JICA Bangladesh Office to invite newly seconded CEOs and CWMOs to counterpart training in Japan. JICA Bangladesh supported its realization. After the training, they had or have worked sincerely and actively.
Feedback to Subsequent or Other Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ With success of the first counterpart training in Japan with a CEO, a CWMO and a Chief Engineer in the 3rd JFY, the second one was conducted with the present CEO, CWMO and Manager of Transport. 2) Necessity for Reviewing Methodology ➢ JET and JICA Bangladesh Office have taken various methods to promote establishment of and staffing to WMD. Some were effective and some did not cause good progress. With the experiences, JET and JICA Bangladesh Office have taken measures to promote the establishment and staffing. 3) Necessity for Reviewing Expected Results ➢ Staffing might not be realized before the end of the Project. However, the expected results are inevitable for main aim of the Project, i.e., capacity development of WMD staff. 4) Required Supports from Outside the Group ➢ Actually, supports from JICA Bangladesh Office have been effective and helpful.

4.2.2 Activity 1.2: To strengthen human resources and institution of Waste Management Department

(1) Result of the Activity

1) Expected Result

As the Project aims at capacity development for improvement of SWM in Dhaka City, most of the activities in the Project have been planned and implemented to strengthen human resources and institution of WMD. This section describes only activities for capacities development common to Output 1 – 5 of the Project.

Table 4.2-2 Expected Result under Activity 1.2

Trainings/ Works	Description
Develop by-laws, regulations, guidelines (if needed)	During the Project, necessity for development of new by-laws or regulations at city level was not identified. WMD Directive and WBA Booklet were expected to be developed.
Third Country Trainings	Third country training is to be conducted once per JFY in principle to visit and observe SWM facilities and to obtain and share information on SWM at relevant countries. Later for 4th and 5th JFY, they were not planned after negation with JICA.
Project Workshop	Except 1st JFY, Workshops once in a year were planned.

2) Actual Result

The results of Activity 1.2 are summarized in Table 4.2-3.

Table 4.2-3 Actual Result of Activity 1.2

Trainings/Works	Description
Develop guidelines	During the Project, WMD Directives, WBA Booklet/Manual were developed. WMD Directives was distributed to major staff of WMD, all related departments heads of DCC, related staff in the Central Government and mass media. Many guidelines, manuals, standard forms, modules for specific aspects have been developed reflecting experiences obtained through implementation of the Project activities in order to develop capacity of WMD at organization level. Development of these guidelines, manuals, standard forms, modules are described in each relevant sections of this report.
Third Country Trainings	India Study Tour (2nd JFY): India Study Tour was conducted in the 2nd JFY from 20th to 25th January 2008 for eight (8) DCC C/Ps at three (3) Indian cities of Pune, Hyderabad, and Kolkata.
	Hanoi Study tour (3rd JFY): Hanoi Study Tour was conducted in the 3rd JFY from 8th to 12th September 2008 for five (5) DCC C/Ps at Hanoi, Vietnam.
Project Workshop	Project Progress Workshops were held in January or February to share progress, good practices, problems/constraints and counter measures taken to overcome problems, obstacles and constraints except 1st JFY. Instead, in the 1st JFY, a three-day workshop was held to review and revise PDM of the Project which contributed to enhancing knowledge and skills of project management as well as encouraged participation to the Project activities.

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.2-4.

Table 4.2-4 Good Practices, Problems and Feedback Identified of Activity 1.2

Good Practices for Successful Implementation	➢ Development of Guidelines: Before the Project, DCC staff were generally not accustomed to developing and using guidelines and manuals specific to SWM. As the guidelines/manuals developed in the Project were prepared by DCC C/P by themselves with support from JET, they are using these guidelines/manuals. The guidelines/manuals will be useful in case staff of WMD or DCC C/P to transfer jobs to successors. ➢ Third Country Training: Upon return to Dhaka City, the DCC mission arranged a meeting of the top officials of DCC to present the results of the mission. Also members of the mission presented their visit results in the Project Team meetings. ➢ Project Progress Workshop: As this type of workshops regarding all aspects related to SWM were rare if any in DCC, the Project Progress Workshops helped participants develop better understanding on overall aspects of integrated SWM. By sharing progress, good practices, problems/constraints and counter measures taken to overcome them, management and coordination level on SWM might have been graded-up. These workshop might create good sense of competition among the section of SWM as well.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Development of Guidelines: The Project Team has not faced major problems/ obstacles and limitations during the development of the guidelines/manuals, except a problem in translation. For some guidelines, English ones should prevail as formal and Bengali one as references for some type of users who cannot understand English well. ➢ Third Country Training: Participants of the study tour should have been more acquainted with the host city and prepare the report upon their return in order to benefit others of the Project Team.

	➢ Project Progress Workshop: There were no major problems, obstacles or limitations for the Project Team to prepare the workshop.
Measures Taken to Solve the Problems	➢ Third Country Training: An orientation meeting was conducted using Orientation Document to prepare the C/P participants for the Study Tour.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ As the guidelines/manuals are used as references, it should be continuously revised with due procedure, if necessary when situation or circumstances change. ➢ Though third country training may require substantial cost to DCC, it may help WMD staff to expand knowledge and skills and grade-up the SWM service level as DCC would be a top runner in Bangladesh regarding SWM and foreign training will promote sharing experiences with similar large neighboring city with similar or higher level of SWM services. ➢ As Project Progress Workshops has substantially helped DCC C/P to develop comprehensive knowledge SWM and enhanced coordination for integrated SWM, WMD headquarter should continue this type of workshops. 2) Necessity for Reviewing Methodology ➢ There found no major necessity to change the methodology regarding to this activity. 3) Necessity for Reviewing Expected Results ➢ There found no major necessity to review expected results regarding to this activity. 4) Required Supports from Outside the Group ➢ Understanding and support from DCC top managers or donor agencies would encourage WMD Headquarters to continue implementing this activity.

4.2.3 Activity 1.3: To prepare Annual Activity Plans

(1) Result of the Activity

1) Expected Result

As proposed in the Clean Dhaka Master Plan, objective-oriented planning, implementation, monitoring and feedback should be introduced to level up the management. Specifically in the Project, the method of project cycle management (PCM) was introduced as a management tool as done commonly in technical corporation projects of JICA. In March, except May for the 1st JFY, plans of activities for the next JFY were expected to be formulated.

2) Actual Result

Annual Activity Plans (AAPs) of the Project have been prepared by each of the five groups corresponding to Output 1 – 5 every year by March.

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.2-5.

Table 4.2-5 Good Practices, Problems and Feedback Identified of Activity 1.3

Good Practices for Successful Implementation	➢ AAP is new to DCC, JET prepared most parts for the approval of group leaders and deputy group leaders in 1st JFY. Since the 2nd JFY, however, DCC C/P has increased their initiative to prepare AAP. Now little support is required for the preparation. For some groups, due to lack of computer skills or manpower, support from JET, especially from its national staff is still necessary.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ WMD has not employed computer operators and not equipped with computers and other business machinery.
Measures Taken to Solve the Problems	➢ No effective measures have been taken. The problems will be solved only after staffing to WMD.

Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ Preparation of AAP is essential for continuous level-up of SWM in Dhaka City. The activity should continue. 2) Necessity for Reviewing Methodology ➢ No review has been made under this Activity. 3) Necessity for Reviewing Expected Results ➢ No review has been made under this Activity. 4) Required Supports from Outside the Group ➢ After staffing to WMD, DCC has to supply proper sets of office equipment.

4.2.4 Activity 1.4: To coordinate Project Activities

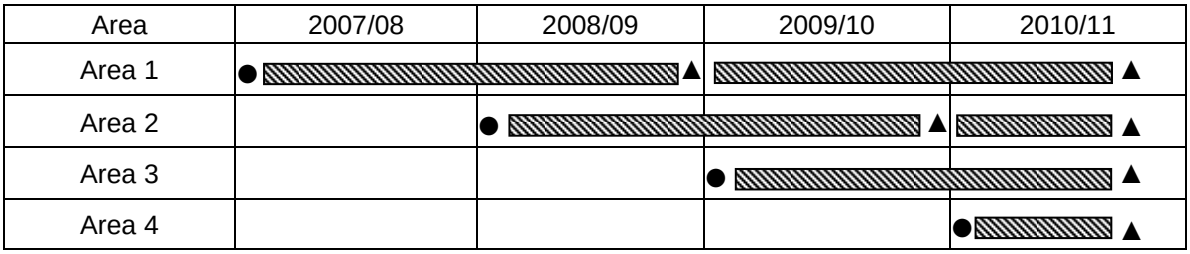
(1) Result of the Activity

1) Expected Result

Under this activity, the following works described in Table 4.2-5 were planned to be conducted. Though activity of "Project progress workshop" is already described in Section 1.2 of this report, the activity is also described in this section as the activity was also import for project management.

Table 4.2-6 Expected Result under Activity 1.4

Works	Description
Hold monthly Project Team meetings	A Project Team meeting is to be conducted each month in principle to coordinate activities from the five (5) Output groups.
Conduct Public Awareness Surveys with beneficiaries of SWM services	Public Awareness Surveys are to be implemented to grasp the baseline conditions of solid waste management including primary collection services, DCC's secondary collection/cleaning services, community people's satisfaction level and complaints on solid waste management, and awareness and practice of community people. For monitoring and evaluation surveys, the effect of the Project activities in the target wards was analyzed. Public Awareness Surveys are to be conducted according the following schedule:



(Legend: ●: Public Awareness Survey (Baseline Survey), ▲: Public Awareness Survey (Monitoring and Evaluation), ▨ : Implementation of Improvement Activities)

Compile good practices and lessons from the Project activities	Eight (8) good practices are to be compiled and distributed from the Project.
Convene Steering Committee meetings	Steering Committee meetings are to be conducted twice for each JFY in principle for the approval of Progress Reports and AAP of the next year, and share other relevant issues regarding the progress of the Project.
Convene Project Progress Workshop	Project Progress Workshop is to be convened once per each JFY in principle to analyze the issues of each of the five (5) Output groups and discuss possible solutions for future implementation.

2) Actual Result

The results of Activity 1.4 are summarized in Table 4.2-7.

Table 4.2-7 Actual Result of Activity 1.4

Works	Activity	Description
Hold monthly Project Team meetings	**(1st JFY)** 1st Project Team Meeting, 12th April, 2007 2nd Project Team Meeting, 17th April, 2007 3rd Project Team Meeting, 15th May, 2007 **(2nd JFY)** 4th Project Team Meeting, 26th July, 2007 5th Project Team Meeting, 14th August, 2007 6th Project Team Meeting, 16th September, 2007 7th Project Team Meeting, 11th November, 2007 8th Project Team Meeting, 18th December, 2007 **(3rd FY)** 9th Project Team Meeting, 18th June, 2008 10th Project Team Meeting, 22nd July, 2008 11th Project Team Meeting, 28th August , 2008 12th Project Team Meeting, 25th September, 2008 13th Project Team Meeting, 18th December, 2008 14th Project Team Meeting, 28th January, 2009 15th Project Team Meeting, 19th February, 2009 **(4th JFY)** 16th Project Team Meeting, 9th June, 2009 17th Project Team Meeting, 26th August, 2009 18th Project Team Meeting, 15th September, 2009 19th Project Team Meeting, 5th November, 2009 20th Project Team Meeting, 23rd December, 2009 21st Project Team Meeting, 25th January, 2010 22nd Project Team Meeting, 22nd February, 2010 **(5th JFY)** 23rd Project Team Meeting, 23rd June, 2010 24th Project Team Meeting, 29th September, 2010 25th Project Team Meeting, 29th November, 2010	Project Team meetings have been conducted basically throughout the Project period besides the months when the Steering Committee meetings have been conducted. The months when neither the Project Team meeting nor Steering Committee meeting has been conducted are January and February 2007, November 2008, October 2009, July, August and October 2010. The Project Team meetings were chaired by CCO or CWMO and attended by Group Leaders, Deputy Group Leaders, and other key members and JET members. The following agenda were usually raised as appropriate: ➢ Confirmation of schedule of project activities ➢ Result of Project activities ➢ Problem to be solved for better implementation ➢ Discussion of PDM (when revision was necessary) ➢ Other important issues which required inter-group coordination (such as compactor introduction)
Conduct Public Awareness Surveys with beneficiaries of SWM services	Public Awareness Surveys were implemented according to the following schedule:	

Works	Activity	Description

Project Target Area	2007/08 (Apr 2007 to Mar 2008)	2008/09 (Apr 2008 to Mar 2009)	2009/10 (Apr 2009 to Mar 2010)	2010/11 (Apr 2010 to Mar 2011)
Cycle 1 (Ward 36 & 76)	● ▨▨▨	▲	▨▨▨	■
Cycle 2 (Ward 44, 63, 65, 75)		● ▨▨▨	▲ ▨▨▨	■
Cycle 3 (Ward 5, 42, 45, 49, 50, 53, 84)			● ▨▨▨	■
Cycle 4 (3 Wards to be decided)				▨▨▨

(Legend: ●: Public Awareness Survey (Baseline Survey), ▲: Public Awareness Survey (Midterm), ■: Public Awareness Survey (Terminal Evaluation) ▨▨▨ : Implementation of Project Activities)

In addition, public awareness survey for evaluation of OVI was conducted in the 5th JFY to evaluate one of the OVIs for the Project Purpose, "The ratio of city residents in Dhaka City who are satisfied with the collection services provided by DCC (or private companies in privatized zones) reaches 50% by the end of the Project from the current level of 36% (Master Plan Study, 2005)".

Compile good practices and lessons from the Project activities	Eight (8) good practices from the Project activities were compiled and are being developed as a booklet. The good practices which were compiled are: ➢ Organizing CUWG and supports for their activities linked with improvement of secondary collection by DCC ➢ Introduction of fixed time station collection system for collection and transportation with compactor vehicles ➢ Improvement in operation and maintenance of final disposal ➢ Analysis of actual SWM cost structure ➢ Awareness raising of the citizens and other stakeholders by PR activities ➢ Develop guidelines and permission procedure for PCSPs ➢ Development of SWM at the Ward level as Ward-based Approaches ➢ Establishment of a Secretariat of members of the 6 city corporations to coordinate and implement SWM programs together The content of the good practices is planned to be disseminated in the Final Seminar to various decision makers across Bangladesh.	
Convene Steering Committee meetings	**(1st JFY)** 1st Steering Committee Meeting, 3rd May, 2007 2nd Steering Committee Meeting, 30th May, 2007 **(2nd JFY)** 3rd Steering Committee Meeting, 24th October, 2007 4th Steering Committee Meeting, 21st January, 2008 5th Steering Committee Meeting, 9th March, 2008 **(3rd JFY)** 6th Steering Committee Meeting, 19th October, 2008 7th Steering Committee Meeting, 3rd March 2009 **(4th JFY)** 8th Steering Committee Meeting, 2nd July, 2009 9th Steering Committee Meeting, 14th December, 2009 10th Steering Committee Meeting, 15th March, 2010 11th Steering Committee Meeting, 24th August, 2010	Steering Committee meetings have been conducted at least twice for every JFY, besides for the 5th FY.
Convene Project Progress Workshop	13th March, 2008 (2nd JFY) Below were the discussion topics: ➢ Developing Human Resources and Improving Working Conditions ➢ Decentralization of SWM to Zone and Ward Levels	

Works	Activity	Description
	➢ Consideration on New Collection Systems ➢ Sanitary Landfill Operation	
	22nd February, 2009 (3rd JFY) Below were the discussion topics: ➢ Case Study 1: Institutional Reform – The WMD Case ➢ Case Study 2: Organizing Community SWM Participation – The CUWG Case ➢ Case Study 3: Improvement of Collection and Transport Efficiency – The WBA 4A Case ➢ Case Study 4: Improvement of Working Conditions of DCC Cleaners – The WBA 2 Case ➢ Case Study 5: Understanding of the Landfill Operation – The Matuail Landfill Daily Operation Case	
	25th February, 2010 (4th JFY) Below were the discussion topics: ➢ Planning and Budgeting of Annual Activities ➢ How to Expand Community SWM in Dhaka City under the Management of WMD ➢ Loading the Wastes Directly at a Short Time from Rickshaw Vans into Compactor in Sanitary Ways ➢ Motivation of the Landfill Staff as One of the Important Factor for Successful Landfill Operation at Matuail	
	20th September, 2010 (5th JFY) Below were the discussion topics: ➢ Objective of the directives of WMD ➢ Directives and good practice ➢ Necessity of Directives ➢ COs' role related to above directives	

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.2-8.

Table 4.2-8 Good Practices, Problems and Feedback Identified of Activity 1.4

Good Practices for Successful Implementation	➢ Project Team Meetings: From the 5th JFY, the monitoring system through the Project Team meetings has improved by confirming the status of issues to be solved which were raised in the previous Project Team meeting. ➢ Project Progress Workshop: Before the Project, job implementation on SWM had implemented with top-down style, where managers were not informed of issues in the field level without skills of field officers to make presentation of the issues. With the development of capacity of DCC C/P, bottom-up approaches have been started. Project Progress Workshops have offered opportunities for WMD managers to understand issues of the field and for the field officers to propose the solutions.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Project Team Meetings: Quality of coordination heavily depends on that of monitoring and reporting. Group leaders or deputy leaders could not spend much time for compiling monitoring reports. ➢ Public Awareness Survey: Personnel for Assistant CWMO (Planning, Community), who were likely to be in charge for the Public Awareness Surveys, were not permanently allocated, and the Project had difficulty conducted consistent and regular analysis of the Surveys. ➢ Good practices: Compilation of good practice has been delayed as the group leaders or deputy leaders could not spend much time due to other duties. ➢ Steering Committee Meetings: Same as the problem for "Project Team Meetings".
Measures Taken to	➢ Full staffing to WMD would be the only way for managers and middle managers of

Solve the Problems	WMD to have enough time to monitor, supervise and coordinate Project activities and SWM activities. Designation of staff like Assistant CWMOs (Planning, Community), Waste Management Officers (Budget, Community), Computer Operators, and other assistants in WMD Headquarters will enhance capacity for coordination of WMD. Assistant CWMOs for ten (10) Zones are important to strengthen coordination at decentralized level as well as to grade up the reporting to the WMD Headquarters. At least DCC should strictly enforce the Office Order issued in June 2008 for full-time assignment to some key posts of WMD. DCC should also assign capable staff whose capacity has developed during the long time of technical cooperation by JICA.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ Nothing in particular. 2) Necessity for Reviewing Methodology ➢ Nothing in particular. 3) Necessity for Reviewing Expected Results ➢ Nothing in particular. 4) Required Supports from Outside the Group ➢ Nothing in particular.

4.2.5 Activity 1.5: To raise awareness and to conduct public relations campaigns on solid waste management

(1) Result of Activity

1) Expected Result

Under this activity, the following works/ items described in Table 4.2-9 were planned to be conducted/ developed.

Table 4.2-9 Expected Result under Activity 1.5

Works/ Items	Targets Groups	Objectives
Newsletters	General Public, Ward Commissioners (City Councillors) and their staff, central government organisations, staff of DCC, schools, NGOs, donors and other stakeholders	➢ To provide information on the Project ➢ To build platforms for introduction of activities of DCC and NGOs ➢ To promotion of exchanges of opinions
Clean Dhaka Ward Contests	Ninety (90) Ward of Dhaka City	➢ To give incentives for better SWM to Ward Commissioners (City Councilors) and the residents by awarding Wards active in SWM and clean Wards
Distribution of Leaflets on SWM	General public, Students, Ward Commissioners (Councillors) and their staff, central government organisations, staff of DCC, schools, NGOs, donors and other stakeholder , Citizens of Dhaka City, primary collectors, etc.	➢ To provide information on SWM ➢ To request for support to SWM of Dhaka City ➢ To education on environment and sanitation ➢ To improve primary collection
Distribution of SWM Calendar	General Public, Students	➢ To provide information on SWM ➢ To request for support to SWM of Dhaka City ➢ To education on environment and sanitation
Distribution of Stickers on SWM	Rickshaws, etc. in focal areas	➢ To raise awareness of the public ➢ To provide information on the Project
Opening Web-site	Persons who are interested in SWM inside and outside of Bangladesh	➢ To provide information on Project activities inside and outside of Bangladesh ➢ To build a platform for opinion exchange
Installation of	Citizens of Dhaka City	➢ To raise awareness of the public

Works/ Items	Targets Groups	Objectives
bill boards		
Development of video program or animation	Citizens of Dhaka City	➢ To provide information on SWM ➢ To education on environment and sanitation ➢ To provide information on the Project ➢ To use in Project activities

2) Actual Result

Results of Activity 1.5 are summarized in Table 4.2-10.

Table 4.2-10 Actual Result of Activity 1.5

Works/ Items	Product/ Activity	Description
Newsletters	Fourteen regular newsletters Two special newsletters on WBA	Two to four newsletters were developed and disseminated each year for dissemination of general project information to the C/Ps, general public, and relevant stakeholders.
Clean Dhaka Ward Contests	Clean Dhaka Ward Contest (2008) Clean Dhaka Ward Contest (2009) Clean Dhaka Week 2010 Clean Dhaka Week 2011 (under preparation)	Clean Dhaka Ward Contest/ Clean Dhaka Week has been conducted every year from the 2nd JFY to 4th JFY. Clean Dhaka Ward Contest in the 2nd and 3rd JFY were conducted amongst DCC cleaners and CIs and PCSPs. From the 4th JFY, Clean Dhaka Ward Contest was reshaped as the Clean Dhaka Week focusing on one week during January 2010, when communities implement SWM activities, with more emphasis on community-based action-oriented campaigns and programs.
Distribution of Leaflets on SWM	3,000 copies (1st JFY) 36,000 copies (2nd JFY) 1,000 copies (3rd JFY)	Besides the leaflets distributed for the purpose of informing residents regarding new collection system of WBA 4, several types of leaflets to increase general awareness on SWM have been developed and distributed by DCC C/Ps and CUWGs.
Distribution of SWM Calendar	1,500 copies of SWM Calendar	SWM calendars for the year 2010 were developed and distributed during Clean Dhaka Week 2010.
Distribution of Stickers on SWM	Project Logo stickers (4,000 copies) (2nd JFY) Project Logo stickers (4,000 copies) (3red JFY) Project Logo stickers (4,000 copies) (4th JFY) Project Logo stickers (4,000 copies) (5th JFY)	Project Logo stickers have been developed each year from the 2nd JFY until the 5th JFY. These stickers have been distributed during community meetings, seminars and workshops, etc. Sticker campaigns were also organized using these stickers.
Opening Web-site	One web-site on the Clean Dhaka Project, linked to DCC web-site	One web-site on the Clean Dhaka Project has been established in the 2nd JFY. Inception Report, Clean Dhaka Master Plan, Departmental Cost of SWM, WMD Directives, Progress Reports, Newsletters, and photographs of project activities are uploaded to the web-site (http://www.dhakacity.org/cleandhaka/).
Installation of bill boards	Seven locations within Dhaka City from the 2nd JFY to 4th JFY.	Billboards to raise awareness of citizens not to throw waste and to keep their surrounding environment clean have been installed at seven locations throughout Dhaka City from the 2nd JFY until the 4th JFY.
Development of video program or animation	DVD on Project Activities (100 copies) DVD on WBA Activities (100 copies)	DVD on Project Activites has been developed in the 3rd JFY. One hundred copies of this DVD have been distributed to relevant stakeholders of SWM. The DVD has been shown at community meetings, meetings with relevant stakeholders on SWM, etc. as a way to visually introduce the activities of the Project. In addition, DVD on WBA Activities is being developed in the 5th JFY.
Eco-bag	300 units (1st JFY) 1,000 units (2nd JFY) 1,000 units (3rd JFY) 1,000 units (4th JFY) 1,000 units (5th JFY)	Eco-bags have been developed consistently every year for two (2) types of campaigns and disseminated through various community meetings and trainings. The following types of eco-bag campaigns have been conducted: ➢ Type-1: Customers will bring their own shopping bag for shopping to a specific grocery shop. After each customer

Works/ Items	Product/ Activity	Description
	(under development)	brings his/her own bag for shopping for five (5) times that person will get one Eco-bag as reward through the grocery shop. ➢ Type-2: Customers at vegetable markets are asked one question regarding environment/SWM issue as a quiz. If the customer answers correctly, s/he will get one (1) Eco-bag. Even if the customer does not answer correctly, s/he will get second chance to answer a quiz.

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.2-11.

Table 4.2-11 Good Practices, Problems and Feedback Identified of Activity 1.5

Good Practices for Successful Implementation	<u>Public Relations Activities in General</u> ➢ The Clean Dhaka Project, as the general approach to public awareness, intended to enhance citizens' awareness by physically mobilizing DCC C/Ps together with respective target groups of the Project (such as communities in target areas, PCSPs, slum areas, etc.) by utilizing inputs from the Project. Rather than investing huge amount of funds for mass media advertisements, the Project pursued a financially feasible approach to reach the general public through news articles and TV news by creating and showing attractive Project activities on solid waste management and establishing opportunities for the media to cover the activites. <u>Partnership with NGO/ Volunteer Association Network</u> ➢ A platform of NGOs and Volunteer Associations related to solid waste management, organized by the Project Team, was developed for the Clean Dhaka Week 2010. One (1) NGO and two (2) volunteer associations participated in the campaign and conducted drama on SWM, clean-up campaigns amongst University students, debate competition amongst high school students, art competition amongst primary school students, and community-based cleaning campaigns with their respective partnering community groups or schools. This kind of partnership is quite new to WMD, which can be a mechanism to sustain this kind of campaign on a vast scale. <u>Acquisition of Private Sponsorship</u> ➢ Various private sponsors were arranged by DCC, which supported the promotion of Clean Dhaka Week. The types of sponsorship arranged for the Week were: development and broadcasting of TV commercial, sending SMS message on the Clean Dhaka Week to all mobile carriers in Bangladesh, and receiving refreshments for participants at the Awarding Ceremony.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Continuous and timely PR activities require permanent allocation of staff for positions such as Assistant CWMO (Planning, Community) and WMO (Community), which were likely to be in charge of PR activities in corporation with the Conservancy Wing.
Measures Taken to Solve the Problems	➢ For big campaigns, such as the Clean Dhaka Week, a coordination team was set up involving both the Conservancy Wing and the Engineering Wing to overcome lack of manpower and coordination skills.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ Partnership with NGOs can be utilized for other community SWM activities at the ward level to expand the coverage of Project activities and to utilize the strengths of NGOs, such as strong ties with schools, etc. Acquisition of private sponsorships can be expanded to general public awareness raising on SWM, by utilizing mass media such as TV and newspaper. 2) Necessity for Reviewing Methodology ➢ Nothing in particular.

	3) Necessity for Reviewing Expected Results ➢ Nothing in particular. 4) Required Supports from Outside the Group ➢ Until full allocation of WMD staff is realized, support from other groups for big events and campaigns are necessary to allocate coordination tasks with various external stakeholders.

4.2.6 Activity 1.6: To develop solid waste management network among city corporations

(1) Result of Activity

1) Expected Result

During the two (2) years since the 1st Bangladesh SWM Conference was held in the development study, the city officials "networked" on issues related to SWM on individual basis. Even in our Project, we benefited from this informal network when we visited Chittagong in October 2007 and were well received and introduced to the SWM issues there. Also we received members from Khulna City Corporation at DCC and discussed their ongoing SWM projects.

Such interactions convinced our Project Team of the need to continue and formalize these meetings and exchange of experiences and ideas on SWM between the city corporations.

During this Project, we therefore determined to include the Bangladesh SWM Conference. Bangladesh SWM Conference is to be held every year with Mayors and/or relevant staff for SWM of the six major cities in Bangladesh (Dhaka, Barisal, Chittagong, Khulna, Rajshahi, and Sylhet), to raise priority to SWM through discussions on problems/issues of SWM, to transfer experiences and know-how of Dhaka City for SWM to other cities, and to raise motivation and pride of DCC staff by holding leadership in SWM in Bangladesh.

2) Actual Result

(a) 2nd Bangladesh SWM Conference (11th February, 2008) (2nd JFY)

The 2nd Bangladesh SWM Conference was held with the following outline.

Table 4.2-12 Outline of 2nd Bangladesh SWM Conference

Date	11th February, 2008
Venue	Hotel Pan Pacific Sonargaon, Dhaka
Objectives	➢ To continue the dialogue among the city corporations of Bangladesh started in the first Bangladesh SWM Conference held in 2006 ➢ To implement the principles and activities set out in the Dhaka Declaration which was adopted on March 5th, 2006 in the first conference
Participants	16 technocrats and actual implementers of SWM at the operational levels from the City Corporations other than DCC were invited. Around 90 people altogether, including private sector and NGOs, participated in the Conference. The Conference was chaired by CEO, DCC.

The summary of discussions is shown as follows:

Table 4.2-13 Summary of Discussion in 2nd Bangladesh SWM Conference

<u>Theme 1 – Policy guidelines and necessary reforms</u> ➢ SWM should be clearly addressed in national policies to ensure its effective implementation ➢ Awareness building and public relations activities on SWM should be strengthened ➢ Privatization should be considered on a gradual basis ➢ SWM should be incorporated in urban planning as well as land use planning ➢ Capacity development amongst city corporations is necessary ➢ All stakeholders should be involved in policy making

Theme 2 – Action plans in partnership with relevant stakeholders ➢ Goals, targets, time frames, work items and target boundaries should be defined ➢ The action plans should consider target areas smaller than ward level ➢ Research, analysis and training on appropriate technology is encouraged ➢ Community involvement in early stage of planning is encouraged ➢ Waste collection and transport rules should be clearly defined ➢ Stakeholders in industry, commerce and medical institutes should be involved in the planning ➢ Training should be encouraged to all stakeholders ➢ Roles of stakeholders should be clearly defined ➢ Social aspects should be considered first before the aspects of management and technology ➢ Vision for building partnership among the stakeholders should be included in policy
Theme 3 – City corporation network on SWM ➢ Experiences should be shared amongst city corporations ➢ Resources and manpower may be shared ➢ Secretariat should be set with appropriate functions and funding with approval from local and central governments ➢ Technical guidelines related to SWM should be developed among city corporations ➢ Universities and academic institutions should be incorporated into Secretariat activities ➢ Secretariat can plan a role in policy making related to SWM ➢ Establishment of SWM Department in city corporations should be considered

In conclusion, the 2nd Bangladesh SWM Conference recommended 1) continuing holding the Bangladesh SWM Conference, with the third to be held at Chittagong in early 2009, and 2) setting up the Secretariat for the Conference to oversee its activities.

(b) 3rd Bangladesh SWM Conference (8th and 9th March, 2009) (3rd JFY)

The 3rd Bangladesh SWM Conference was held with the following outline.

Table 4.2-14 Outline of 3rd Bangladesh SWM Conference

Date	8th and 9th March, 2009 (8th March, 2009: Conference, 9th March, 2009: Field Trip)
Venue	Dahlia Banquet Hall, The Peninsula, Chittagong
Objectives	➢ To continue the dialogue between the city corporations of Bangladesh started in the first and second Bangladesh SWM Conferences held in 2006 and 2008 respectively, both in Dhaka. ➢ To implement the principles and activities set out in the Dhaka Declaration which was adopted on March 5th, 2006 in the first conference ➢ To discuss on setting up a Secretariat for the Conference as proposed in 2nd Bangladesh SWM Conference ➢ Sharing experiences on SWM practices in Bangladesh based on the practical experiences of each City Corporation
Participants	The Conference was chaired by CEO, DCC. Over eighty (80) people including technocrats and actual implementers of SWM at the operational levels from the City Corporations participated in the Conference.

The summary of discussions is shown as follows:

Table 4.2-15 Summary of Discussion in 2nd Bangladesh SWM Conference

Theme 1 – Experience sharing on SWM ➢ DCC, Khulna City Corporation and Chittagong City Corporation each gave a presentation on their SWM efforts and conditions, followed by questions and answers.
Theme 2 –Policy guidelines regarding SWM ➢ Previous policy and rules related to environment only mentions SWM very briefly and are not sufficient. As approving new laws, policies or rules will take time, preparing and utilizing waste management guidelines through sharing experience of the City Corporations is practical.

➢ A working committee can be formed to prepare the draft of such guideline and external experts can also be included. ➢ A ministry level committee can be formed once a draft of such guideline is prepared
Theme 3 – City corporation network on SWM ➢ Approval from respective Mayors of the City Corporations is required, as setting up a secretariat requires budget. Understanding of urgency to set up a secretariat by the Mayors is necessary. ➢ Legal authority to form a secretariat should be confirmed and justified. Permission from upper levels of the government is necessary.

In conclusion, the 3rd Bangladesh SWM Conference recommended 1) setting up a Working Committee, headed by DCC and involving Ministry personnel, to prepare a National SWM Guideline, and 2) expediting the process within each City Corporations to approve the establishment of the Bangladesh SWM Conference Secretariat.

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.2-16.

Table 4.2-16 Good Practices, Problems and Feedback Identified of Activity 1.6

Good Practices for Successful Implementation	➢ As technocrats are actually implementing activities for SWM, they are willing to share information, knowledge and experiences for improving respective SWM services. The discussions were active.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Due to delay in election of the Mayor and city councilors of Dhaka City, even secretariat meeting for the 4th Bangladesh SWM Conference has yet to be held by the end of the Project. ➢ No other major problems, obstacles or constraints were found.
Measures Taken to Solve the Problems	➢ Project Team decided to support for holding secretariat meeting because at this moment importance lies on implementation of declaration and decisions made in 1st Bangladesh SWM Conference, and less political influence are envisaged.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ Bangladesh SWM Conference and Secretariat is a good opportunity for managers of the six City Corporations related SWM to share information, knowledge and experiences. This activity might also enhance dedication and pride of managers of WMD as leaders of SWM in Bangladesh. It is highly recommendable to continue the conferences and the secretariat meetings. 2) Necessity for Reviewing Methodology ➢ In case this activity continues lying on mayors, it might be politicize. It would be recommendable for MoLGRD&C to facilitate the secretariat meeting or meetings of relevant technocrats of the six City Corporation with supports of Dhaka City Corporation (DCC). The facilitation would also help MoLGRD&C to develop regulatory capacity in the field of SWM. In case SWM services in Bangladesh reach to a new horizon and the secretariats are ready, holding next mayors conference should be held. 3) Necessity for Reviewing Expected Results ➢ No necessity to review and modify expected results. 4) Required Supports from Outside the Group ➢ Donors could support the conference or secretariat meeting. For donors, this activity would be a good chance to join in the network.

4.2.7 Activity 1.7: To review and modify Clean Dhaka Master Plan

(1) Result of Activity

1) Expected Result

It was expected that Clean Dhaka Master Plan is modified according to socio-economic situation and environmental concern of the citizen by the end of the Project.

2) Actual Result

In the 4th JFY, a survey on waste recycling markets and trend was carried out and its possible implication was analyzed. With the result, Project Team found that markets and trend of recycling has not changed much compared to the situation of 2004 that are analyzed in the development study.

A socio-economic survey for newly added jurisdiction of Dhaka City was also conducted in the 4th JFY. The survey covered geographic locations, population of the areas, major business establishments, providers of primary and secondary waste collection services as well as projection of the newly added areas.

At the beginning of the 5th JFY, a taskforce for the master plan revision was established with a office order of DCC. Based on the results of these surveys as well as feedback of the experiences obtained through the Project, the taskforce and JET have developed draft revised master plan. The draft has been reviewed by the representatives of the related departments of DCC and comments from the representatives are being compiled into the draft.

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.2-17.

Table 4.2-17 Good Practices, Problems and Feedback Identified of Activity 1.7

Good Practices for Successful Implementation	➢ Draft revised master plan has been prepared by the taskforce and reviewed by representatives from other related department of DCC.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Taskforce members are busy for other activities and have not being able to spend much time for the master plan revision. ➢ Surveys for the mater plan review as well as input for JET might not have bee enough with limited Project Resources.
Measures Taken to Solve the Problems	1) To cover-up the problems and limitation, JET has taken the following approach. ➢ To save the time for DCC C/P, documentation works were carried out JET members the ideas are frequently discussed in the Project Team meetings and with individual consultations. ➢ As the Project Team has experienced in implementation, these experiences are fully utilized in the revision.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ Experiences for the master plan revision should be fully utilized in formulation of Clean Dhaka Master Plan II. 2) Necessity for Reviewing Methodology ➢ Methodology applied for formulation Clean Dhaka Master Plan and its revision might possibly applicable in formulation of Clean Dhaka Master Plan II. 3) Necessity for Reviewing Expected Results ➢ Though DCC involvement in 3Rs (reduce, reuse and recycle) are not much proposed in Clean Dhaka Master Plan. Recently the Government of Bangladesh has issued policies in 3Rs. These policies might have to be included in the Clean Dhaka Master Plan II. Global warming issues might also have to be included as this topic is also of great concern among national and international communities. 4) Required Supports from Outside the Group ➢ Though DCC will be the main role player, participation and supports of the Central Government, donors, national and international consultants will be required.

4.3 Activities for Output 2

4.3.1 Activity 2.1: To develop Ward SWM Guideline

(1) Result of Activity

1) Expected Result

Expected results are shown in below:

- Ward SWM Guideline was formulated through lessons learned from previous activities on ward level SWM during the Master Plan Study.
- DCC was expected to promote community level SWMt based on the guideline through the WBA activities.

2) Actual Result

(a) Formulation approval of the Guidelines

As most of the Community Group Counterpart (C/P) personnel who are mainly CIs were new in participatory SWM, firstly the discussions were made among them on lessons learned from the past activities, clarification of Clean Dhaka Master Plan and project overall framework. Based on lessons learned from the previous activities and the strategies for promoting participatory SWM, the Draft Guidelines for the Establishment of Ward SWM were prepared. The guidelines describes the objectives and principles of Ward SWM, organizational structure, roles and responsibilities of key partners, and the process of Ward SWM including activities of Ward SWM organizations (Ward SWM Committee and Community Unit Working Groups (CUWG)) and PCSPs, as well as coordination among the partners and monitoring.

The draft guidelines were shared with leaders of Ward SWM Committee of Wards 6 and 65, where pilot projects were implemented in the Master Plan study, to incorporate their opinions in the guidelines. In addition, a meeting inviting NGOs, who have substantial experiences in participatory/community activities in Dhaka, was held to share main ideas and the framework of Ward SWM, and to discuss on how to make the system of Ward SWM practical in Dhaka in August 13th, 2007.

The guidelines were translated into Bengali, a step necessary to obtain the official approval of DCC, and several Community SWM Group members were involved in this effort. This helped them increase their understandings of the objectives, principles and processes of community SWM. Finally the guidelines were approved by DCC in 2009.

The implementation of participatory SWM was carried out in different wards including wards 36, 44, 63, 69, 75 and 76 based on the ward SWM Guidelines (first edition). The principle of community participation was closely observed in planning and implementation process by involved community organization and NGOs, aiming to identify sections of the Guidelines requiring modification or amendment. Discussions among C/P personnel and other stakeholder were held several times.

(b) Components of the Authorised Guidelines

Objectives of participatory SWM were stipulated in the guidelines as below:

- Empowering community people to participate in the process of planning and taking actions to improve SWM in their wards
- Improving quality and efficiency of primary collection under well-coordinated and transparent conditions
- Expanding service coverage of primary collection including small shops, slum areas and congested areas with narrow roads
- Raising people's awareness on SWM
- Developing good coordination among DCC, PCSPs and community people.

Components of the guidelines were stipulated in the guidelines as below:

- Organizing CUWGs.
- Incorporation of methodological tool to motivate and empower community people and PCSPs in community SWM.
- Fnctional steps to be followed to promote community SWM with clearer role of different stakeholders or ward level organizations or committees.
- Incorporation of ways to develop ownership of community people through the development of CUWG and promoting community SWM.
- Monitoring of Community SWM by CUWGs
- Factors promoting or inhibiting sustainability of Community SWM, and utilization of available resources to ensure the sustainability.
- Include the relevant clause of practices, rules and penalties regarding SWM mentioned in the DCC ordinance in the Guideline
- Roles and position of Councilors (previously called as Ward Commissioners) in Community SWM
- Specific roles and responsibility of CIs at Ward level, and CSIs and COs at Zone level
- Incorporation of ideas on building partnership of with NGOs and PCSPs
- Improvement of existing collection system and introduction of new collection system

The guidelines described an organization structure of ward SWM as shown below. It is essential to coordinate among the three main stakeholders for ward SWM; DCC, Community and PSCP. Decision makers as the CWMO and City Councilors have vital roles as supervisors and supporters of this system.

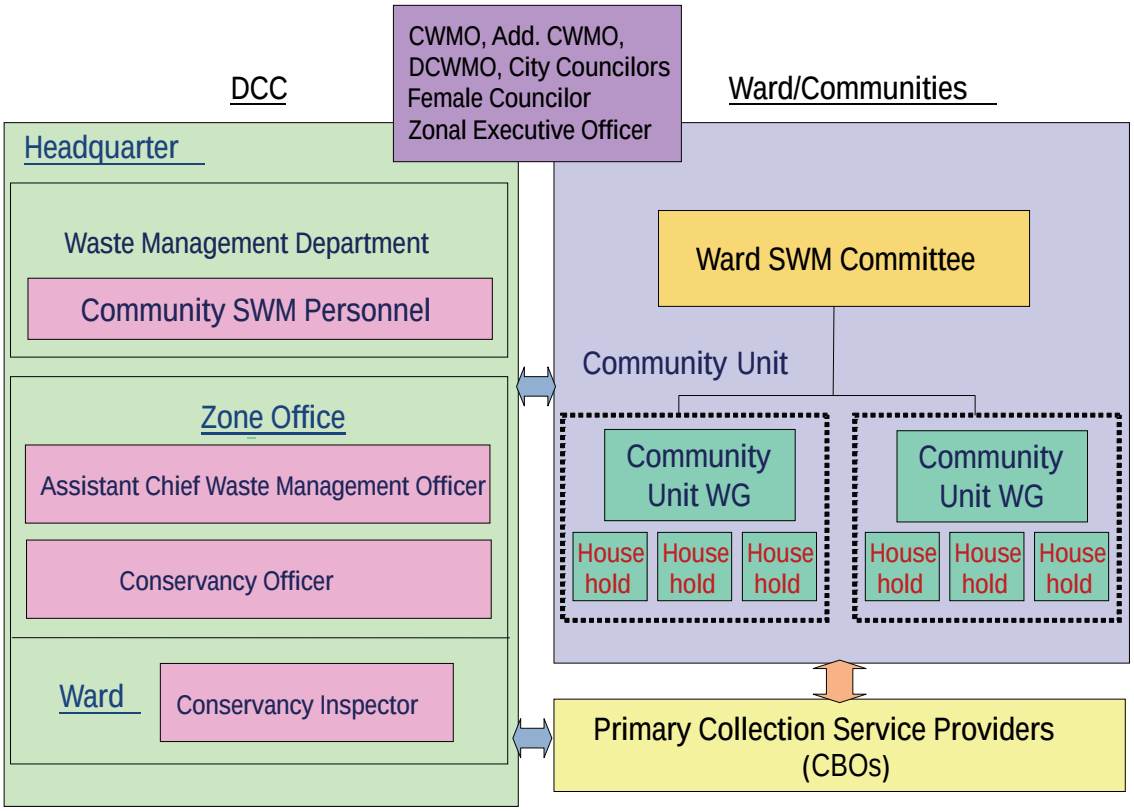


Figure 4.3-1 Organizational Structure of Ward SWM

Although it is proposed to form the Ward SWM committee leveling each ward, efforts are exerted in

developing CUWGs at present. As next step, the Ward SWM Committee composed from the CUWG members can be assumed as a long term objective to promote participatory SWM in a ward.

(2) Good Practices, Problems and Feedback Identified

Good practices, problems and feedback to subsequent activities identified through Activity 2.1 are shown in the following Table.

Table 4.3-1 Good Practices, Problems and Feedback Identified

Good Practices for Successful Implementation	➢ Stakeholders dialogues were held to formulate and revise Ward SWM Guideline. These dialogues took place aiming to make counterpart (CIs/COs) understand about the process, principles and activities as stipulated in the Guidelines.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Lack of officials who can look after community SWM activities in WMD and can periodically revise and update the Guidelines. ➢ Less involvement of COs at the commencement of the project although this was rectified in the latter years of the Project with their participation.
Measures Taken to Solve the Problems	➢ Issue of shortage of manpower in WMD has been raised and discussed in the Steering Committee meeting, Project Team meetings and meetings with JICA Advisory Committee and Evaluation Missions. ➢ On-the-job training and motivation program for the COs have been taken into consideration with high priority.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application to Other Activities ➢ It is necessary to have stakeholders dialogue at the time of revising and updating the Guidelines. 2) Necessity for Reviewing Methodology ➢ None 3) Necessity for Reviewing Expected Results ➢ From time to time WMD staff should be checked on how far they understood the Guidelines. 4) Required Supports from Outside the Group ➢ Policy support is continuously required.

4.3.2 Activity 2.2: To Organize Community People and Support Community Level SWM Activities

This activity is included in WBA3 as mentioned Section 4.1.4 of this report.

4.3.3 Activity 2.3: To Improve Primary Collection Permission and Monitoring System

(1) Result of Activity

1) Expected Result

Expected results are shown in below:

- Permission and monitoring system for primary collection is established and approved by DCC to increase transparency of the system.
- WMD applies and follows the system.

2) Actual Result

(a) Establishment of Permission and Monitoring System

In the past to obtain permission, PCSPs had to submit the application documents to WMD. After the evaluation of the application documents by the CO and CI, CWMO gave the permission. However DCC had no standardized application form and the criteria for the evaluation and the evaluations were not clear.

Establishment of the permission and monitoring system was considered and the discussion was started. In 2nd JFY, six PCSPs' permission applications went through DCC C/P in charge of Community SWM. DCC C/P evaluated their social acceptability, capacity to work, and relevant experience in this field. DCC

C/P tried to make realistic field evaluation through several meetings with community and also meetings with PCSPs. DCC C/P obtained the experience and lessons on the evaluation in the permission process through the activities.

In the first half of the 3rd JFY, Community Group C/P visited eight wards and tried to make realistic field evaluation for PCSP permission. Meetings were held with PCSPs and also with community people, and social acceptability of PCSPs and their capacity to provide good service were evaluated. In addition, the real problems which PCSPs faced were clarified and the C/P advised PCSPs on how to solve the problems.

Based on these field experiences, in order to improve the system of permission to PCSPs and monthly monitoring of their services, a series of discussions among Community Group C/P, CWMO and JET were held. The improved permission system comprises the following newly developed four forms:

Form 1: Application form for Permission/Renewal of PCSP

Form 2: Evaluation for Permission/Renewal of PCSP

Form 3: Monthly Report

Form 4: Permission Letter

These forms have been checked with several field tests in the WBA wards and improved with the help of a PCSP workshop and trainings. The forms were approved by the Mayor in July 2010.

At present out of 270 approved PCSPs in DCC, only five PCSPs of five different wards have received permission under the improved system.

(2) Good Practices, Problems and Feedback Identified

Good practices, problems and feedback to subsequent activities identified through the activity are shown in the following Table.

Table 4.3-2 Good Practices, Problems and Feedback Identified

Good Practices for Successful Implementation	➢ WBA training, WBA meeting, Core Group meeting, PCSP training, PCSP workshops of circles 1 and 2 have been conducted. ➢ Newly developed forms have been uploading the in the DCC website and distributed to all PCSPs through COs of all ten zones of DCC. ➢ Improved permission and monitoring system has started and promoted to PCSPs.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Lack of manpower in WMD Headquarters has hampered maintaining data base and analyzing the monthly reports. ➢ COs are still not in the position to compile all the monthly reports of the PCSPs of the zone and submit a summary report to WMD Headquarters. ➢ Many CIs and COs do not have enough skill and motivation to promote the improved permission and monitoring system of PCSPs.
Measures Taken to Solve the Problems	➢ Due to the lack of manpower of WMD Headquarters, COs have been reminded frequently to follow the new system at the time of granting new permission, renewal and submitting monthly reports. ➢ Discussions have been made in WBA meetings and Core Group meetings and understanding in the system has been developed.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ Although the system has been applied in some part of the five wards, DCC should extend it across the whole DCC area. 2) Necessity for Reviewing Methodology ➢ Monthly reports has not been submitted to WMD in the five wards where the system I applied. It is necessary for WMD to monitor the system properly.. 3) Necessity for Reviewing Expected Results ➢ There should be an well-established database so that at any time the status of primary collection service in any ward or any community unit can be immediately referred. 4) Required Supports from Outside the Group ➢ No major reuited supports from outside groups have been identified so far.

4.3.4 Activity 2.4: To Support Primary Collection Service Providers to Improve their Services

Most of the activities to support PCSPs for improving their services have been carried out through WBA activities mentioned in Section 4.1 of this report. PCSP trainings were held by the Project. The result of the training is described below.

(1) Result of Activity

1) Expected Result

Expected results are shown below:

- Training for PCSP is held to improve their service.

2) Actual Result

Activities for coordination and cooperation with the PCSPs have been carried out through WBA 3 and 4 in the WBA target wards. A training module for PCSP has developed through the Project. the module is described Harmonizing primary and secondary collection, Legal status of PCSP (demand of service, regulation, roles and responsibilities of PCSP), Occupational Health Safety etc.

(2) Good Practices, Problems and Feedback Identified

Good practices, problems and feedback to subsequent activities identified through the activity are shown in the following Table

Table4.3-3 Good Practices, Problems and Feedback Identified

Good Practices for Successful Implementation	➢ Preparation and implementation of training have been conducted by COs & CIs without hiring outsider facilitators or consultants. COs and CIs has developed their capacity through the experience, ➢ PCSPs have been invited to the activities and their relationships with communities have been improved.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Although counterpart received training on TOT and ideas of the PCSP training module, have been taught, support from JET has been needed to conduct the training.
Measures Taken to Solve the Problems	CWMO instructed the COs and CIs to prepare the file and budget for next fiscal years in this regard.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities PCSPs play an important role in the SWM of Dhaka City, and it is necessary to keep continuing PCSP training not only for regular waste collection but also for special waste collection such as that for EIDUL AZHA. 2) Necessity for Reviewing Methodology WMD personnel including CIs and COs have not still be enough capacity to manage the PCSP and to conduct the activities with cooperation with them. It is necessary for WMD to continue the trainings. 3) Necessity for Reviewing Expected Results It would be better if possible to review the expected results depending on performance of PCSPs. 4) Required Supports from Outside the Group None

4.3.5 Activity 2.5: To Organize Awareness Raising and Environmental Education Programs in Target Wards

(1) Result of Activity

1) Expected Result

Expected results are shown in below:

- Several types of environmental program and awareness rising campaign would be held to enhance public awareness on solid waste management of communities in target areas.

2) Actual Result

(a) Awareness Raising and Environmental Education Programs under WBA 3

Awareness raising activities for whole DCC had been implemented as mentioned in 1.5. Besides, this awareness raising activity for target areas is included in WBA 3 as mentioned 4.1.5. The Activity is summarized below.

Table 4.3-4 Awareness Raising and Environmental Education Programs under WBA 3

City Based Program	Community & Ward Based Program	School based Environmental Education Program
Sticker Campaigns to buses, rickshaws and CNGs, newspaper coverage, radio & TV coverage, Clean Dhaka Week Programs, Banners and Billboards display, etc. (refer to Section 4.2.5 of this report)	Rally, leaflet distribution, door to door campaigns for reducing open dumping, community meetings and workshops, cultural program, miking, special cleaning programs, Stakeholders dialogue, etc.	Model schools, mobile school, Recycle bank, (Methods: Panel theater, presentation, recycle games, lectures, evaluation of program), school campus cleaning program, etc.

In addition, this activity shown in below has basically implemented by JOCVs with support from the Project since 2006.

Table 4.3-5 Environmental Education Program

Date	Venue	Student	Ward
2007	**7 schools**	**530 students**	**6 wards**
24-Feb-2007	Rup-Nagar Adarsha High school	120 students (Class 6-10)	6
1-Mar-2007	Haji Ibrahim Govt. Primary School	100 students (Class 5)	65
21-Apr-2007	Nidhu Smiriti Govt. Primary School	100 students (Class 3-5)	36
14-May-2007	Abdul Gafhr Shiksha Shibir	50 students (Class 3-5)	33
8-Jul-2007	Rajaribag Police Line School & College	50 students (Class 5-8)	36
28-Jul-2007	Caratitola Primary School	55 students (Class 3-5)	76
20-Nov-2007	Loharpur Sharukari Primary School	55 students (Class 4-5)	81
2008	**9 schools**	**422 students**	**7wards**
28-Jan-2008	Hajharibag Primary School	55 students (Class 4-5)	58
1-Mar-2008	Pearu Sardar Govt.Primary School	50 students (Class 5)	63
7-Jun-2008	Bakshi Bazar Sharukari Primary School	25 students (Class 5)	63
1-Jul-2008	Udayan Primary School	55 students (Class 5)	57
28-Aug-2008	Saint Tomas English School	45 students (Class 5)	78
31-Aug-2008	Sishu kallayn Primary School	50 students (Class 5)	84
30-Nov-2008	DCC Adarsha high School	60 students (Class 5)	85
2-Dec-2008	Mitali Bidya Pith school	32 students (Class 5)	76
2009	5 schools	159 students	4wards
12-May-2009	Shaheed Zia Garl's School and College	32 students (Class 5)	84
23-Jun-2009	Jatrabari Govt. Primary School	32 students (Class 5)	86

Date	Venue	Student	Ward
17-Jul-2009	Shobj Bidda pit high school	40 students (Class 5)	84
14-Oct-2009	Kajipara BDP Primary School	25 students (Class 5)	13
18-Oct-2009	Ayub Ali Givernment Primary School	30 students (Class 5)	52
2010	15schools	1303 students	3wards
13-Jan-2010	Lalmatia Govt.primaly school	100 students (Class 1-6)	45
13-Jan-2010	Laimatia girls School	300 students (Class 1-6)	45
14-Jan-2010	Lalmatia boys School	100 students (Class 1-6)	45
13-Feb-2010	Engineering University Higher Secondary School	60 students (Class 3)	54
6-Mar-2010	Engineering University Higher Secondary School	60 students (Class 4)	54
9-Mar-2010	Engineering University Higher Secondary School	42 students (Class 5)	54
10-Jun-2010	Little Jewells School	60 students (Class 3-5)	84
13-Jun-2010	Morning sun kindergarden	60 students (Class 3-5)	84
30-Jun-2010	Matrimaya Pre Cadet High School	40 students (Class 3-5)	84
5-Jul-2010	Aparajeyo Bangladesh school	37 students (Class 1-6)	84
11-Jul-2010	Little Stars Tutorial	80 students (Class 1-3)	84
22-Jul-2010	AL-Emnan precadet and high school	51 students (Class 3-5)	84
2-Nov-2010	R.K.Showdlury High School	25 students (Class 6)	84
3-Nov-2010	Holy Soul Kindergarden	70 students (Class 1-4)	84
7-Nov-2010	The rose yard Preparatory School	30 students (Class 1-2)	84
8-Nov-2010	Ful Kri Kindergarden & High School	45 students (Class 1-5)	84
9-Nov-2010	Uddipon School	45 students (Class 1-6)	84
10-Nov-2010	Kazlar per Shishu Kanoon School	80 students (Class 4-5)	84

Source: JET





Figure 4.3-2 Photographs of Environmental Education Programs

4.3.6 Activity 2.6: To Coordinate among Community People, PCSPs and DCC

This activity is included in WBA3 and WBA 4 as mentioned in Section 4.1.4 of this report. Coordination among these three stakeholders have been made in most of the WBA wards through different activities such as Kickoff meetings, PCSP training and workshops, CUWG training and community meetings, CAP implementation made by CUWG and short term CAPs made by PCSPs in their trainings. In addition to these, for the promotion of scheduled station collection as WBA 4A and improving existing collection system as WBA 4B, good relationship has been developed among the stakeholders for the betterment of waste management system of the community. There were cases where coordination meetings were held in ward SWM office.

4.3.7 Activity 2.7: To Conduct Training Programs for the Counterparts on Participatory SWM

(1) Result of Activity

1) Expected Result

- Because most of the C/Ps have no experience in the participatory SWM, JET applied the way of OJT and several type of training program shown in below for DCC C/P.

2) Actual Result

(a) PRA (Participatory Rural Apprisal) Training

The objective of PRA training is that CIs and COs obtain necessary skills and knowledge to implement participatory SWM. The program of the training is composed of lectures, group works, brain-storming, role-playing, field work, site-visiting, etc.

(b) Training of Trainers (TOT)

CIs are required to hold workshops and facilitate community to promote participatory SWM. It is essential for CIs to acquire those abilities and TOTs have been held for that purpose. Components of the training are to set as basic concept for workshops, to design and plan training programs, to prepare materials and tools, communication tool, presentation and facilitation.

(c) Computer Training

DCC C/P received computer training course such as MS Ward, Internet, E-mail etc as basic computer skill

(2) Good Practices, Problems and Feedback Identified

Good practices, problems and feedback to subsequent activities identified through the activity are shown in the following Table

Table 4.3-6 Good Practices, Problems and Feedback Identified

Good Practices for Successful Implementation	➢ Counterpart personnel are now confidently facilitating different training such as CUWG, WBA and PCSP as the result of the trainings. In addition, their motivation but also their capacity have been enhanced.
Problems, Obstacles and Limitations Hindering Successful Implementation	DCC high officials have realized the necessity of counterpart training but there are many CIs who were not members of the Counterpart Team and they should also know and practice PRA tools and methods.
Measures Taken to Solve the Problems	DCC officially sent some COs and CIs to academic training institute to learn community health and sanitation education.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities It is highly necessary to conduct refresher training and provide training on PRA to those who have not taken this training. Trained counterpart members are now in the position of conducting such training for the field level application, DCC should take initiatives in this regard. 2) Necessity for Reviewing Methodology DCC should grasp the needs for the training. It is necessary to continue the training for those who had not taken the training and to conduct re-training for those who had once received that. 3) Necessity for Reviewing Expected Results It is good to review the expected result for some counterpart members are now good enough to plan, arrange and facilitate training and community meetings and stakeholders' dialogues. 4) Required Supports from Outside the Group Support from other groups can be helpful for arranging new training with new concepts which is required for the counterparts. Other groups also can support for budget out-sourcing or to liaison with domestic and overseas training institutes in the relevant fields, and sponsor training programs.

4.4 Activities for Output 3

4.4.1 Activity 3.1: To Conduct Surveys and Data Collection and Analysis for Improvement of Collection Efficiency

(1) Result of Activity

1) Expected Result

This activity was expected to identify the reasons for inefficient operation of waste collection vehicles as input for improvement of the operation through conducting several surveys.

2) Actual Result

(a) Analysis of Data Obtained by Operation of the Weighbridge

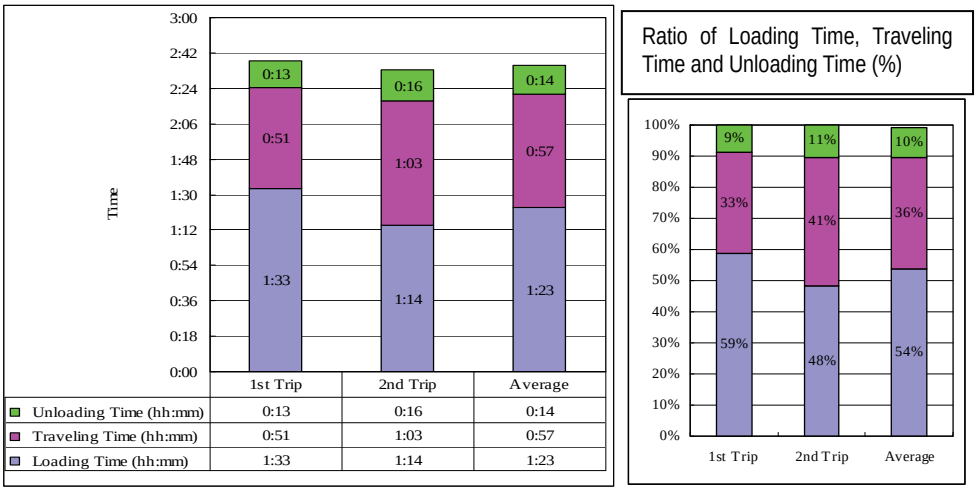
Analysis has been conducted based on the data obtained by weighbridge which was installed with Japan Debt Cancellation Fund at Matuail landfill site. Therefore, it should be noted that the collection vehicles which passed over the weighbridge without weighing and the collection vehicles transporting wastes to Amin Bazar Landfill were not included. The number of vehicles that were measured by the weighbridge averaged 240 to 250 vehicles daily and their average trips were 320 trips per day.

In addition to the trip number, it was also important whether loaded waste amount was corresponding to the capacity for the vehicles or not. An average waste amount per trip carried by CC and OT was 2.04 tons and 2.44 tons respectively. Considering the capacities of the available containers (3 ton and 5 ton), the transported wastes per trip of 2.04 ton might seem low, but this could be partly explained by the poor conditions of the containers which made their actual carrying capacities less than the nominal ones. In the case of OT, the trucks had capacities of 1.5 ton and 3 ton, and therefore the loading weights appeared to be sufficient.

(b) Conducting Time and Motion Survey

Time and motion survey was adopted as the means to analyze the collection vehicle efficiency in terms of routing, carried waste amount per unit time such as loading time and travelling time.

As a result of the time and motion survey, the average trip time for nine trips was two hr 35 min. The total time consisted of the loading time, travelling time and unloading time which were one hr 23 min., 57 min. and 14 min. respectively as shown in Figure4.4-1.



Source: Time and motion survey in the Project

Figure 4.4-1 Average Loading Time, Traveling Time and Unloading Time

In conclusion, the efficiency improvement of collection vehicle would be carried out by the following activities.

- To shorten the loading time and select the proper type of collection vehicles for future plan
- To normalize the vehicle operation for increasing the number of trips and/or to increase the loading weight per trip per vehicle

(c) Identification of Low Performance Trucks

Forty-six vehicles as shown below were identified as low performance trucks based on the analysis of weighbridge data from Matuail landfill site in June 2008. Twenty-three vehicles out of 46 vehicles were categorized as low performance due to ageing trucks which had been frequently repaired based on the interview with Transport Department and Mechanical Division 1. The other two vehicles might be listed because of record error of the weighbridge. As a result the remaining 21 low performance trucks might have possibility to enhance their performance due to redesign of the collection routes. DCC and JET planned to conduct a further analysis by time and motion survey; however the survey could not be carried out because of the strong objection from Drivers' Union.

Table 4.4-1 Analysis of the Low Performance Trucks

SN	Truck No. (DCC trucks only)	Low Performance Indices			Survey result
		a. Operation rate (%) (1)	b. Trips/Working day (2)	c. Capacity utilization (%) (3)	a. Improvement potentiall (6)
		(OT (4), CC (5) <70%)	(OT<1.7, CC<2.5)	(OT<80%, CC<70%)	b. Repair problem (7)
1.	11 0023	3%	1.0	55%	b
2.	11 0044	13%	2.0	66%	a
3.	11 0121	3%	1.0	276%	b
4.	11 0122	7%	1.0	83%	b
5.	11 0124	3%	1.0	151%	b
6.	11 0126	20%	1.0	68%	a
7.	11 0130	3%	1.0	95%	a
8.	11 0134	3%	1.0	67%	b
9.	11 0177	7%	1.5	49%	a
10.	11 0180	7%	1.0	72%	a
11.	11 0189	7%	1.0	64%	a
12.	11 0191	13%	1.5	58%	a
13.	11 0196	7%	1.0	111%	b
14.	11 0200	7%	1.0	74%	a
15.	11 0202	7%	1.5	74%	a
16.	11 0209	7%	4.0	265%	a
17.	11 0211	17%	1.0	59%	a
18.	11 0212	27%	3.4	248%	b
19.	11 0225	3%	1.0	68%	a
20.	11 0228	10%	2.7	74%	a
21.	11 0722	6%	1.0	66%	a
22.	11 0733	23%	2.4	72%	b
23.	11 0735	16%	1.0	83%	a
24.	11 0744	71%	3.1	103%	b
25.	11 0750	19%	1.5	47%	b
26.	3183	3%	1.0	n/a	a
27.	8673	10%	1.0	95%	b
28.	8674	7%	1.0	117%	b
29.	05 0039	3%	1.0	148%	b
30.	05 0041	10%	3.0	115%	b
31.	05 0044	17%	1.6	156%	a
32.	07 0233	3%	1.0	115%	b
33.	07 0239	33%	1.0	92%	a
34.	11 0009	23%	1.3	n/a	a
35.	11 0268	3%	1.0	163%	b
36.	11 0291	3%	1.0	81%	b

SN	Truck No. (DCC trucks only)	Low Performance Indices			Survey result
		a. Operation rate (%) (1)	b. Trips/Working day (2)	c. Capacity utilization (%) (3)	a. Improvement potentiall (6)
		(OT (4), CC (5) <70%)	(OT<1.7, CC<2.5)	(OT<80%, CC<70%)	b. Repair problem (7)
37.	11 0298	7%	1.0	47%	a
38.	11 0628	3%	1.0	207%	b
39.	11 0635	26%	1.0	141%	a
40.	11 0636	3%	1.0	163%	b
41.	11 0755	3%	1.0	197%	b
42.	11 0759	16%	1.0	182%	a
43.	11 0778	10%	1.0	161%	b
44.	11 0810	3%	1.0	122%	b
45.	11 0849	3%	1.0	63%	a
46.	11 0863	10%	1.0	44%	b

Notes:

(1) Operation Rate: (Total working days in one month) / (total days in that month)

(2) Trips/Working day: (Total trips in one month) / (total working days in that month)

(3) Haul capacity: (Monthly average haul per trip) / (Truck nominal capacity)

(4) OT : (Open Truck)

(5) CC : (Container Carrier)

(6) Improvement potential : Further investigation required at the collection area level and with the truck driver to determine improvement potential

(7) Repair problem : Repeated repairs indicates serious truck conditions

Source: Weighbridge data at Matuail Landfill

(d) Development of Plan for Improvement of Collection and Transportation

DCC and JET prepared a guideline to formulate plans for improvement of collection and transportation based on the analysis mentioned above in the 3rd JFY. The guidelines identified three types of plans; 1) long term improvement plan, 2) mid-term improvement plan, and 3) annual improvement plan. Table in below briefly describes each of the three plans.

Table 4.4-2 Contents of the Waste Collection and Transport Plans

Improvement Plan	Action Program	Operation Plan
(1) Duration		
10 - 20 years	5 - 10 years	Annual
(2) Function		
➢ Identify long term objectives and targets based on the understanding of the present conditions and forecast of future situation ➢ Propose suitable technical systems ➢ Provide an understanding of the required effort in manpower and equipment and related costs	➢ Formulate an action program for specific projects belonging to the improvement plan of preliminary phases ➢ Formulate detailed plans by locations and scheduling such as priority areas for extending service coverage, areas where new technical system shall be introduced, etc. ➢ Identify requirements by section in terms of manpower, equipment and costs and based on technical system most appropriate for the cleansing section (ward) in question ➢ Identify specific locations for facilities proposed in the improvement plan such as transfer stations, ward offices, etc.	➢ Distribute the available equipment and manpower by cleansing section (ward) ➢ Prepare procurement of equipment and hiring of manpower on a yearly basis ➢ Prepare budget for the required procurement and hiring and prepare necessary administrative procedures for procurement ➢ Assess and as necessary modifed operation based on a stringent operation control monitoring system using truck scale, waste collection amount data and operation standards

Improvement Plan	Action Program	Operation Plan
➢ (3) Contents		
➢ Diagnose existing conditions and identify issues ➢ Project future conditions ➢ Set planning framework (objectives, constraints) ➢ Study technical systems and select appropriate alternatives ➢ Calculate equipment and manpower requirements ➢ Calculate financial cost for implementing the plan and prepare financial plan	➢ Phase the improvement plan objectives by the section and time ➢ Detail study of each the section and determine technical system ➢ Calculate equipment and manpower by section and prepare procurement and hiring plans ➢ Select suitable sites for proposed facilities based on selection criteria study ➢ Prepare cost studies so as to secure financing for the plan components	➢ Consider number and type of equipments and manpower required by ward ➢ Monitor operation to determine work efficiency and required strengthening ➢ Develop truck routes with equal shares of waste haul considering truck capacity ➢ Based on technical system applied, specify locations of communal containers, collection stations, and sections served daily, 3 days/week and 2 days/week
➢ (4) Persons responsible		
➢ CWMO, Add. CWMO, SE and EE Collection, of WMD ➢ UPD, DCC ➢ Private consultants	➢ CWMO, Add. CWMO, SE and EE Collection, of WMD ➢ UPD, DCC ➢ Ward level WMD officers	➢ CWMO, Add. CWMO, SE and EE Collection, of WMD ➢ Ward level WMD officers

(e) Study on Mini-Transfer Station

Citizens usually dispose their wastes to nearby dustbins and containers through PCSPs. DCC constructed Mini-Transfer Stations (MTS) which store some containers to increase the efficiency of waste collection. Ten Mini Transfer stations were in operation in nine wards of DCC in 3rd JFY. A comprehensive survey was done at the ten Mini Transfer Stations to study structure, rickshaw van traffic, container traffic and operation management.

The result of the survey was summarized in the following tables. All the MTS had floor gradients to run off the water. But among the ten MTS three had water logging due to blockage. All the MTS were enclosed by walls made of brick and tin sheets as well as gates.

Table 4.4-3 Outlines of Mini Transfer Stations (1)

Name of MTS	Slope	Water logging		Wall	Gate		Degree of odor	Toilet/ washing facilities	Water supply	Drainage Facility		Construction Year
	Y/N	Y/N	Reason	Sides & material	Condition	Opening Time	Normal/ Bad/ Very Bad	Y/N	Frequency	Condition	Water goes to	
Kallyanpur Notun Bazar MTS	Y	N		1 side CI sheet 1 side brick	Bad	17:00 hrs	Normal	N	3 to 4 times/ week	Good	Mainstream drain	2007
Kallyanpur Bus Stand MTS	Y	N		3 side CI sheet	Not Good	Every RV operators	Normal	N	2 to 3 times/ week	Good	Low land	2007
Golapbagh Mat, Dolpur	Y	N		4 sides Brick wall	Good	17:00 hrs	Normal	N	3 to 4 times/ week	Good	Mainstream drain	2007
Lalmatia Mini Transfer Station	Y	N		3 sides brick w.	Good	17:00 hrs	Normal	N	No	Good	Mainstream drain	2008
Happy House, Mirpur	Y	Y	Blockage	3 sides wall	Good	Whole day	Normal	N	Not regular	Not Good	Mainstream drain	2007
Kachukhet Tamanna Complex MTS	Y	Y	Leachate	3 sides brick w. 2 sides Broken	Broken	17:00	Bad	N	N	Blocked		2008
Section 14, Mirpur, MTS	Y	N		3 sides brick w.	Good	Always open	Normal	N	2 to 3 times/ week	Good	Mainstream drain	2007
Kalabagan Mini Transfer Station	Y	Y	Leachate	3 side brick wall	Good	18:00 hrs	Bad	N	Once in a day	Blocked	Near by street	2007
Khejur Bagan Gol Chokkor MTS	Y	N		4 sides brick wall	Good	17:00 hrs	Normal	N	3 to 4 times/ week	Good	Mainstream drain	2007
Sonargaon Road MTS	Y	N		3 side brick w.	Good	18:00 hrs	Normal	N	Not everyday	Good	Mainstream drain	2008

Source: Mini Transfer Station survey

Table 4.4-4 Outlines of Mini Transfer Stations (2)

Name of MTS	Number of Containers	Total Containers Capacity	Rickshaw Van			
			Total number of RV	Total number of RV trips	Total number of repeated trips	Waste hauled by RV (kg)
Kallyanpur Notun Bazar MTS	2	10	16	16		3200
Kallyanpur Bus Stand MTS	3	15	16	28 to 32	12 to 16	7500
Golapbagh Mat, Dolpur	4	18	30	30		8820
Lalmatia Mini Transfer Station	1	5	24	15 to 16	No	2930
Happy House, Mirpur	4	12	10	26	6	6500
Kachukhet Tamanna Complex MTS	2	6	Not known	Not known	No	Not known
Section 14, Mirpur, MTS	3	9	7	7		
Kalabagan Mini Transfer Station	6	24	17	26	9	4800
Khejur Bagan Gol Chokkor MTS	5	25	35 plus	50	Not known	9000
Sonargaon Road MTS	5	19	12	20	8	5000

Source: Mini Transfer Station survey



Ward 16



Ward 7

Figure 4.4-2 Mini transfer Station

(f) Container Survey:

In October 2009, a survey was carried out to find out the actual number of dilapidated containers. At that time there were 41 containers of 5 ton capacity and 116 containers of 3 ton capacity which may be classified as dilapidated, as shown in below.

Table 4.4-5 Container Scenario: October 2009

Zone	Total no of Containers	No. of Locations	5 ton	3 ton	New 5 ton	Unusable		
						5 ton	3 ton	3 ton (designed by M/P)
1	44	40	22	22	1	5	7	5
2	67	47	13	54	0	5	17	18
3	30	21	16	14	6	2	3	6
4	83	53	26	57	2	11	13	6
5	83	52	34	49	1	9	12	12
6	43	24	35	8	0	6	0	1
7	56	26	27	29	17	1	4	1
8	83	35	24	59	17	2	9	2
9	32	13	32	0	32	0	0	0
Total	521	311	229	292	76	41	65	51

Source: Container survey

During the site survey many problems regarding the containers and their locations were identified.

Table 4.4-6 Problem regarding Existing Containers

SN	Problems	How to solve?	Who can solve?	Support
1.	Containers are not collected every day	Regular monitoring by CI/CO	Conservancy Wing, WMD	Community
2.	Irregular disposal to the dumping site	Regular monitoring by CI/CO can resolve this problem	Conservancy Wing, WMD	Transport Dept.
3.	Different types of containers gathered at a place	Calculate the waste amount and finalize the actual number of actual types of containers to be placed	Engineering Wing, WMD	Transport Dept.
4.	Very dirty surrounding	Regular monitoring by CI/CO	Conservancy Wing, WMD	Community
5.	Under capacity container placed	Calculate the waste amount and finalize the actual number of actual type of container to be placed	Engineering Wing, WMD	
6.	Wastes were burnt in some containers.	Regular monitoring by CI/CO	Conservancy Wing, WMD	Community

SN	Problems	How to solve?	Who can solve?	Support
7.	Waste pickers were using containers for recycling and segregating.	Regular monitoring by CI/CO	Conservancy Wing, WMD	Community
8.	Lids of containers were broken or stolen.	Regular monitoring by CI/CO & inform to the headquarter whenever they observe some problems with the containers	WMD	Mechanical, Engineering Dept., Transport Dept.
9.	DCC cannot find space for containers place.	Survey all over the ward and find the space to place container, otherwise introduce scheduled collection station.	WMD	Community
10.	Containers created traffic hazards	Survey all over the ward and find the space to place container or if possible to introduce compactors	WMD	Community
11.	At least 3 times old wastes are found at surroundings	CI should take initiative to clear those and then to observe the situation by the higher officials	Conservancy Wing, WMD	Mechanical, Engineering Dept

Source: Container survey

Problems in Picture

2



3



4



5





Figure 4.4-3 Problem regarding existing containers

(g) Waste Amount Survey at landfill sites

To know the actual waste amount disposed at landfill sites, Project Team conducted waste amount survey at both the sites for consecutive seven days between July 20 and July 26, 2010. Waste amount disposed at Matuail Landfill during the survey was 1,478 ton/day as shown in the following table.

Table 4.4-7 Disposed waste amount at Matuail LFS (Estimation)

Month	No. of trips		Waste Amount (ton/day)		
	Weighed	Not weighed	Weighed	Not weighed	Total
20-Jul	394	116	1,140	373	1,513
21-Jul	425	95	1,212	297	1,509
22-Jul	421	96	1,183	304	1,487
23-Jul	405	103	1,169	327	1,496
24-Jul	372	103	1,033	325	1,358
25-Jul	365	129	1,074	407	1,481
26-Jul	333	159	1,008	494	1,502
Total					10,346
Average (total / 7days)					1,478

Source: Weighbridge Data at Matuail LFS

It was founded that around 30 % of collection vehicles had passed through the weighbridge at the site without measuring their weight. The waste amount not weighed was estimated by number of trips and unit waste collection amount of each collection vehicle. The unit amounts were shown in the following table.

Table 4.4-8 Unit waste collection amount of each vehicle

	Open truck(3ton)	Open truck (5ton)	Container Carrier (3ton)	Container Carrier (5ton)
Average amount (ton/trip/vehicle)	2.98	3.92	2.52	3.57

Source: Weighbridge Data at Matuail LFS, June 2010

Number of trips of incoming waste collection vehicles at Amin Bazar landfill site during the survey is shown in the following table.

Table 4.4-9 No. of Trips at Amin Bazar landfill site

	OT(3ton)	OT(5ton)	CC(3ton)	CC(5ton)	CM(2ton)	CM(5ton)
20 July	20	24	24	80		2
21 July	23	31	49	84		2
22 July	13	25	40	74		2
23 July	11	29	32	75		2
24 July	17	28	33	95		2
25 July	17	24	65	41	1	2
26 July	26	24	42	54	2	2

Remark: OT: Open Truck, CC: Container Carrier, CM: Compactor
Source: Waste amount survey

Waste amount disposed at Amin Bazar Landfill site during the same period is estimated based on unit waste collection amount and number of trips. Disposed waste amount at Amin Bazar LFS is 526 ton/day. Accordingly, total waste amount disposed at the both landfill sites was 2,004 ton/day.

Table 4.4-10 Disposed waste amount at Amin Bazar LFS (Estimation)

Unit: ton/day

	OT(3ton)	OT(5ton)	CC(3ton)	CC(5ton)	CM(2ton)	CM(5ton)	Total
20-Jul	60	94	60	286	0	8	508
21-Jul	69	122	123	300	0	8	622
22-Jul	39	98	101	264	0	8	510
23-Jul	33	114	81	268	0	8	504
24-Jul	51	110	83	339	0	8	591
25-Jul	51	94	164	146	2	8	465
26-Jul	77	94	106	193	3	8	481
Total							3,681
Average (total / 7days)							526

Remark: OT: Open Truck, CC: Container Carrier, CM: Compactor
Source: waste amount survey

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through Activity 3.1 are shown in the following table.

Table 4.4-11 Good Practices, Problems and Feedback Identified

Good Practices for Successful Implementation	None
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Fundamental date on waste collection vehicle had been necessary, but Transport Department was not much cooperative to provide the actual data. ➢ Driver belonging in Transport Department and driver's union showed strong objection for activity on efficient operation of the vehicles
Measures Taken to Solve the Problems	➢ Good understanding and cooperation should be developed among relevant departments through regular sharing of all types of relevant information which can narrow down the gaps. ➢ Strong administrative decisions and meetings with the union leaders can solve the weighbridge problem as well as time and motion survey.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ Regular vehicle list should be updated through collecting the necessary data from the transport and mechanical department at a definite time such as April of each

	year. ➢ Regular update of the demand for the containers with supportive information (such as type of container, size) should be documented each year at a particular time. 2) Necessity for Reviewing Methodology ➢ As DCC faces difficulty to control the drivers' union, they should make some regular sharing of the decisions so that small problems or mistrust between the authority and drivers can be avoided. 3) Necessity for Reviewing Expected Results ➢ None 4) Required Supports from Outside the Group ➢ Regular update from the landfill group and the transport department is very much needed.

4.4.2 Activity 3.2: To Improve Efficiency of Collection System

Several activities for improvement of secondary collection were carried out as WBA 4 activities described in 4.1.5. Activities relating EGAP vehicles are described in this part.

(1) Result of Activity

This activity is closely relating one of WBA4A. It is that further detail is described in here. As mentioned above, main activity is introduction and allocation of the 100 vehicles procured through EGAP.

1) Expected Result

DCC procured 100 waste collection vehicles shown in Table 4.4-13 through Environmental Grant Aid Project of Japan in the 5th JFY. It was expected that the EGAP vehicles would be introduced and operated by DCC utilizing the experience gained from the WBA activities.

2) Actual Result

(a) Introduction and Operation of Compactors

Compactor vehicles were a totally new type of collection vehicles for DCC. These trucks are highly efficient and environmental friendly vehicles due to compaction system and closed body. The compactors vehicles have been introduced into different areas in Dhaka in light of following aspects:

[Large Waste Generator]

There are some housing areas and shopping areas in Dhaka where large amounts of solid wastes are generated everyday. The compactor truck can collect large amount of solid waste at once with compaction system, and therefore the areas are suitable for the compactor.

[Container removal]

There were many containers which caused bad odor, scattered waste, proliferation of insects and traffic congestion across Dhaka. Residents living around the containers had complained to DCC about the uncomfortable situation caused by the containers. DCC intended that compactor truck would be allocated at these areas instead of the containers and the containers are be removed from these areas.

DCC and JET conducted a series of studies on collection method with compactor vehicles in Wards 45, 36 and 49 for different types of collection systems in the 4th JFY. Based on the studies' results the following three collection methods were selected, as shown below. The basic concept of the three methods was Fixed-time and Fixed-station Collection System which meant that compactors would collect the waste collected by PCSP etc at designated times and locations.

1. Direct Loading System by Bowls

Rickshaw vans (RVs) parks beside a compactor truck and truck cleaners load wastes directly from RV to the truck with use of bowls and mats. At a time at least waste from two rickshaw vans can be unloaded into the compactor. In practice, it is observed that it took 7-10 minutes depending upon the size of the RVs.




2. Bin Collection System

PCSPs and cleaners employed by households or shops of the buildings collect wastes with bins from residents and put the bins with wastes at some designated points. Compactor truck collects the wastes at the designated points. This process is also very swift as the wastes are already in the bucket.




3. Door to Door

DCC designates many points as collection points. Residents, cleaners employed by households of the buildings and shop employees take their wastes to the point when the compactor truck comes to the points. Truck cleaners load the wastes at the points.




Figure 4.4-4 Collection method applied

Allocation plan for the compactor vehicles was prepared in 4th JFY after many surveys and studies. The target areas were discussed at WBA meetings, with CWMO chairing these meetings. Finally the target areas of the compactor vehicles were proposed to CWMO through Executive Engineer (Collection and Transport) and after confirmation of Transport Manager were approved by the higher authority of DCC in April 2010. During preparation work for the introduction, the target areas had been slightly revised through further discussion, taking into consideration of current situation in Zones 9 and 10.

Allocation plan for compactor trucks had been prepared in consideration of following premises:

- Compactor truck should make two trips a day. In order to match primary collection, 1st and 2nd trips would be carried out around 1 am and 5 pm respectively in principle.
- Compactor trucks would be introduced into the target areas gradually. Once compactor trucks would be introduced, most of the containers in the areas would be removed.
- One driver and two truck cleaners were required for a compactor truck.
- DCC procured 35 compactor trucks through EGAP. Around five trucks out of 35 units would be used as emergency and stand-by vehicles.

Target areas and starting date are shown in Table 4.4-14. .

Preparation for the compactor allocation has been carried out in accordance with work flow shown below. At first, details on collection work, such as collection time, collection method and locations of collection points were decided through discussions with PCSP and the residents. DCC and JET prepared leaflets explaining the details in each target area based on the discussions as shown in the Figure 4.4-6. Campaigns have been held just before the allocation.

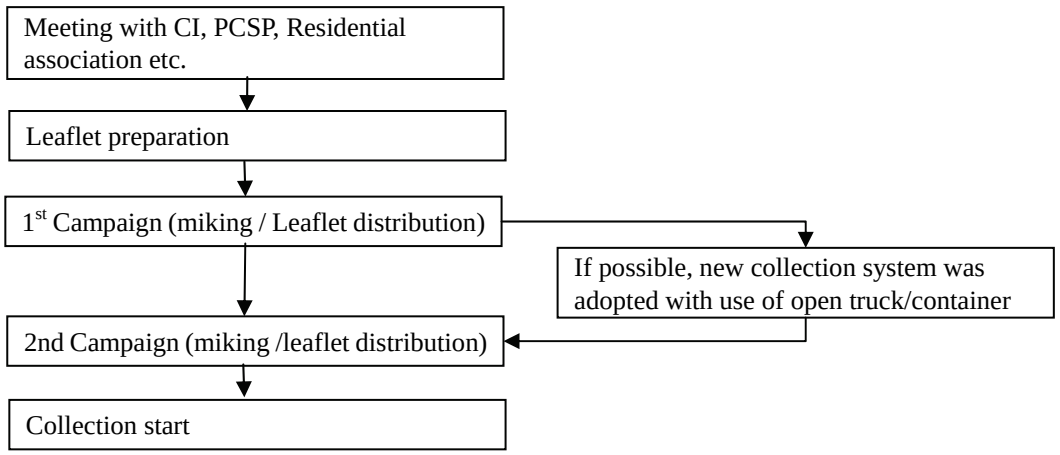


Figure 4.4-5 Work Flow of Preparation for Compactor Vehicle Allocation

Table 4.4-12 Target area and start date of the compactor introduction

1st Batch of Compactor Allocation						
Sl. No.	Collection Start	Capacity	Trip 1 (about 1:00pm)		Trip 2 (about 5:00pm)	
			Area	Ward	Area	Ward
1	23-Jun	5 ton	WBA unit at Lalamatia	45	WBA unit at Lalamatia	45
2	6-Jul	2 ton	WBA Unit at paltan	36	AGB Colony Mothijheel	33
3	10-Jul	5 ton	WBA unit at Dhanmondi 7A	49	WBA unit at Dhanmondi 7A	49
4	13-Jul	5 ton	Bonosri Housing	22	Bonosri Housing	22
5	15-Jul	2 ton	University Students' Hall	57	New Baily Road Apartments & Food shops	53
6	18-Jul	2 ton	Eskaton Road Gov. Housing & Baily Road Officers' Colony (2)	53	WBA unit at Shamibag	76
7	25-Jul	2 ton	WBA Unit at Mirpur	5	WBA Unit at Mirpur	5
2nd Batch of Compactor Allocation						
Sl. No.	Collection Start		Trip 1 (about 1:00pm)		Trip 2 (about 5:00pm)	
		Capacity	Area	Ward	Area	Ward
8	21-Sep	5 ton	Dhanmondi 12/A beside the Lake Park	49	Dhanmondi 12/A beside the Lake Park	49
9	21-Sep	5 ton	Dhanmondi 12/A beside the Lake Park	49	Dhanmondi 12/A beside the Lake Park	49
3rd Batch of Compactor Allocation						
10	28-Sep	2 ton	Kalshi Road	2	Kalshi Road	2
11	28-Sep	5 ton	Answer Kemp at Darussalam Road	12	Answer Kemp at Darussalam Road	12
12	28-Sep	5 ton	Answer Kemp at Darussalam Road	12	Answer Kemp at Darussalam Road	12
13	28-Sep	2 ton	Ward 63 (Hossaini Dalan)	63	Ward 63 (Hossaini Dalan)	63
14	28-Sep	2 ton	Nilkhet Babupara & Coffee House	52	Nilkhet Babupara & Coffee House	52
4th Batch of the compactor allocation						
15	6-Oct	5 ton	Green Road 7 Road	50	Green Road 7 Road	50
16	6-Oct	5 ton	Green Road 8 Road	50	Green Road 8 Road	50
17	11-Oct	5 ton	Ring Road Adabor	43 & 45	Ring Road Adabor	43 & 45

18	11-Oct	5 ton	Ring Road Adabor	43	Ring Road Adabor	43
19	11-Oct	5 ton	Family Planning & Asad Avenue	44 & 45	Family Planning & Asad Avenue	44 & 45
5th Batch of Compactor Allocation						
20	26-Oct	5 ton	Agargaon New Road	41	Agargaon New Road	41
21	27-Oct	5 ton	Agargaon New Road	41	Agargaon New Road	41
22	26-Oct	2 ton	Dhanmondi 4A-7A	49	Dhanmondi 4A-7A	49
23	5-Nov	5 ton	Ward 38 back side of PM office	38	Ward 38 back side of PM office	38
6th Batch of Compactor Allocation						
23	Not yet	5 ton	Gulshan Shooting Club	19	Gulshan Shooting Club	19
24	Not yet	5 ton	Gulshan Shooting Club	19	Gulshan Shooting Club	19
25	Not yet	5 ton	Gulahan Road 73	19	Gulahan Road 73	19
26	Not yet	2 ton	Gulahan Road 73	19	Gulahan Road 73	19
Next Candidate Areas of Compactor Allocation						
27	Not yet		Taltola Bus Stand	16	Taltola Bus Stand	16
28	Not yet		Avenue-4	6	Avenue-4	6
29	Not yet		South side of Shohid Minar	9+10	South side of Shohid Minar	9+10
30	Not yet		Shialbari	7	Shialbari	7
31	Not yet		Baridhara Main Road	19	Baridhara Main Road	19
32	Not yet		Ward 53 Mogbazar-Banglamotor	53	Ward 53 Mogbazar-Banglamotor	53
33	Not yet		Ward 38 back side of PM office	38	Ward 38 back side of PM office	38
34	Not yet		Ward 59	59	Ward 59	59

Source: JET



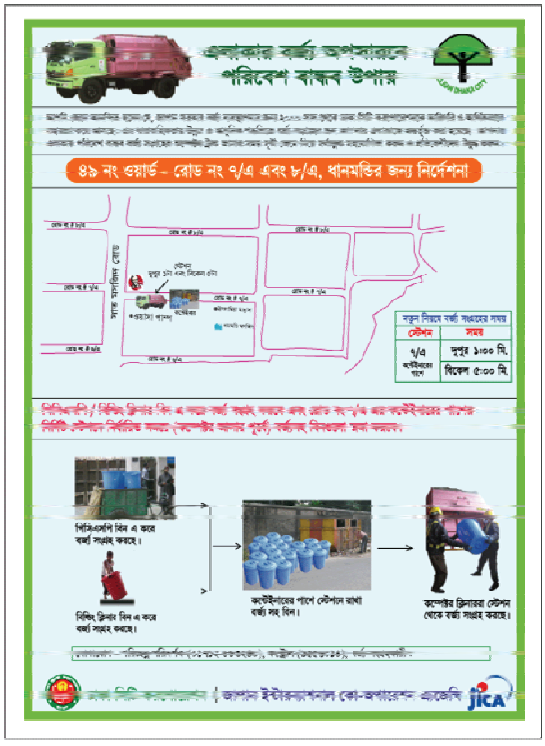
Ward 5



Ward 33



Ward 36



Ward 49

Figure 4.4-6 Some Leaflets for Compactor Introduction

The following table summarizes the compactor introduction activities until November 2010.

Table 4.4-13 Summary Table of Compactor Introduction Activities

Ward	Field visit for Rationalizing in Site Selection	Sharing introduction strategy and consensus building among CO,CI, DCC HQ official	PCSP & Community Meeting	Preparation of leaflet and campaigns (miking, HH level campaign)	Inaugural Meeting	Mats, bowels Leaflet
45	✓	✓	✓	✓	✓	✓
36	✓	✓	✓	✓	-	Community prepared leaflets
33	✓	✓	✓	✓	✓	✓
49	✓	✓	✓	✓	✓	✓
22	✓	✓	✓	✓	✓	Community prepared leaflets
57	✓	✓	✓	✓	✓	✓
53	✓	✓	✓	✓	-	✓
76	✓	✓	✓	✓	-	Not leaflet
5	✓	✓	✓	✓	-	✓
2	✓	✓	✓	✓	-	✓
12	✓	✓	✓	✓	-	✓
19	✓	✓	✓	✓	Planned	✓
63	✓	✓	✓	✓	✓	✓
52	✓	✓	✓	✓	✓	✓
50	✓	✓	✓	✓	-	✓
43	✓	✓	✓	✓	✓	✓
44	✓	✓	✓	✓	✓	✓
41	✓	✓	✓	✓	-	✓
38	✓	✓	✓	-	-	No leaflet
16	✓	Planned	Planned	-	-	-
6	✓	Planned	Planned	-	-	-
9+10	✓	Planned	Planned	-	-	-
7	✓	Planned	Planned	-	-	-
53	✓	Planned	Planned	✓	-	✓
59	✓	Planned	Planned	-	-	-

Source: JET

(b) Introduction and Operation of Arm Roll Trucks:

For the introduction of arm roll trucks, the Project Team mainly targeted large markets where many containers were located. Locations where the arm roll trucks have been operated are shown in below.

Table 4.4-14 Location for Arm roll trucks

Sl. No.	Ward	Area
1	39	Kawran Bazar (3)
2	33	Shantinagar & Fakirapool (2)
3	52	New Market (2)
4	70 & 71	Hotel Al Rajjak (2) & Nayabazar
5	52	Coffee House
6	19	Gulshan 2 Market

Sl. No.	Ward	Area
7	7	Shialbari (2)
8	78	Victoria Park
9	36	Box Culvert Road
10	23	Khilgaon Matir Masjid
11	35	Mouchak (Fortune Shopping)
12	36	Chamelibag
13	34	End of Khilgaon Flyover
14	35	Razarbag Police
15	35	Malibag market
16	70	Beside Fire Brigate office of Fulbaria



Figure 4.4-7 Change of Trailer of 20T capacity into Arm roll at Fakirapul Bazar, ward 33

(c) Introduction and Operation of Container Carriers

Project Team assumed that the Container Carriers procured through EGAP would be replaced the old existing ones. Drivers rejected to drive the Container Carriers because of the CNG vehicles. Accordingly, DCC planned to employ new drivers to drive the vehicles. DCC has introduce X Container Carriers out of 45 whose location is shown in below since November 2010.

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through Activity 3.2 are shown in the following table.

Table 4.4-15 Good Practices, Problems and Feedback Identified

Good Practices for Successful Implementation	➢ New collection system; fixed-time and fixed-station system with compactor vehicles have been introduced smoothly despite many problems. ➢ Distribution and deployment plan of EGAP vehicles and logistics which have been prepared by the Project Team and submitted to transport pool by CWMO and accepted by Transport Department. .
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Some compactor drivers could not make two trips because of heavy traffic and blockage of roads because of accidents or construction works. Besides; some compactor drivers deliberately made only one trip which hindered the successful implementation of scheduled station collection by the compactor trucks. ➢ Platforms to place the arm roll's containers are not well built so the wheels cannot move properly over the surface. ➢ At the beginning, it was found that vehicles were becoming out of order so frequently which caused disappointment of the PCSP workers and community people. ➢ Still in some areas there was mismatch of timing of collection between scheduled time of compactor arrival to the station and RVs arrival to the station ➢ PCSPs were not ensuring the operational logistics such as bowls, mats and buckets as soon as they were required.

	➢ For 5-ton compactor vehicles, two truck cleaners for a vehicle might not sufficient. In some cases, the truck cleaners have been exhausted with too much work load, while PCSP workers have supported truck cleaners for loading in many cases. ➢ Drivers rejected to use the Container Carriers.
Measures Taken to Solve the Problems	➢ Cooperation from community and PCSPs is essential for compactor collection. ➢ The platforms to place the arm roll's containers should be reinforced or the container should be placed on well paved streets. ➢ Follow up of progress of work of EGAP vehicles deployment and monitoring daily operations of already deployed vehicles (timing, loading, trips, crew behavior etc) ➢ For securing drivers for the Container Carriers, newspaper (National Daily) advertisement for appointment of 100 cleaners and 50 drivers was published in the second week of November with the prior approval from DCC administration.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ Proper Coordination meetings from the beginning of vehicle allocation planning should be arranged. Two types of meetings might be necessary. One at the ward level with the community and PCSP and another with the drivers. 2) Necessity for Reviewing Methodology ➢ In cases of breakdown of the vehicles, quick response of the Engineering Wing of WMD can easily solve the problem. ➢ Engineering Wing of WMD should regularly check the vehicle operation with coordination with the Conservancy Wing as well as maintenance work by the WMD workshop. ➢ Capacity building such as decision making skill, etc., for deployment of EGAP vehicles in particular, should be strengthened further. ➢ Allocation of truck cleaners has to be reviewed since truck cleaners have generally harder workload compared to other types of cleaners. 3) Necessity for Reviewing Expected Results As this activity is very much related with the collection efficiency the expected results are needed to be reviewed regularly. 4) Required Supports from Outside the Group ➢ Strong initiative of DCC officers to control drivers is required.

4.4.3 Activity 3.3: To Improve the System of Repair and Maintenance of Equipments

(1) Result of Activity

1) Expected Result

This activity was expected to identify the reason for improper repair and maintenance works as input for improvement of the repair workshop through conducting several surveys. It was also expected that the repair and maintenance work at the repair workshop would be improved.

2) Actual Result

(a) Result of Survey on Maintenance and Repair of Vehicle and Equipment

Repair works of collection vehicles had four flows depending on the availability of spare parts at the repair workshop of Mecanical Division-1 of DCC's Engineering Department, as studied in 2nd JFY, and the cost of spare parts/repair as summarized in the following table.

Table 4.4-16 Repair Work Flow of Collection Vehicles

No.	Premise	Process for the repair
1.	Spare parts are available at repair workshop	Repair workshop immediately proceeds to repair work and most of the vehicles are repaired in one day.
2.	Estimated cost of repair/ spare parts is more than 2 lakh	Centeral Store of DCC calls for the Tender and repair and/or purchase spare parts. Minimum 2 months is required for most of the cases.
3.	Estimated cost of repair/spare parts is between 0.5 lakh and 2 lakh	Center Store of DCC calls for submission of Quotation from the suppliers/ contractors for repair and/or purchase spare parts upon the Mayor's approval. Minimum 20 days is required for most of the cases.
4.	Estimated cost of repair/spare parts is less than 0.5 lakh	Center Store of DCC calls for submission of Quotation from the suppliers/ contractors for repair and/or purchase spare parts upon the CEO's approval. Minimum 15 days is required for most of the cases.

Source: JET

Detail process of repair work is illustrated in the following Figure in collaboration with the Repair workshop of DCC. Further investigation was necessary to simplify the processes to minimize the repair work period. In this stage (2nd JFY), the following matters were further considered for the improvement.

- More and appropriate spare parts should be purchased through the annual procurement plan of the Repair workshop to take more the Process-1 for repair works of the above table 4.4-18.
- Simplifying and lessening the paper work for approval in several stages of repair work, tender and quotation processes.
- Review the follow-up work of Repair workshop to urge the Center Store to quicken the services.
- Review the function and process of the Tender (Quotation) Evaluation Committee to shorten the appraisal processes.

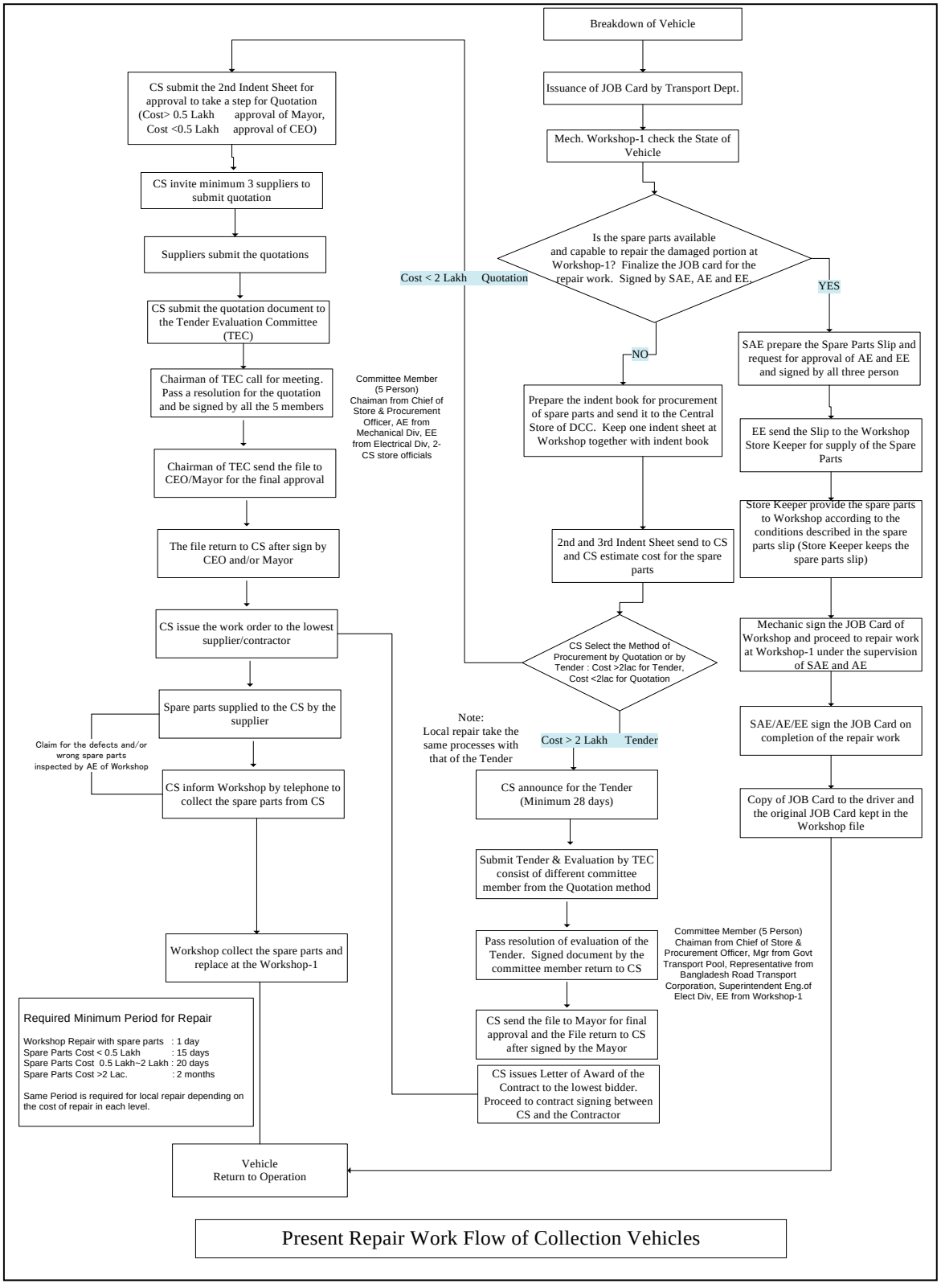
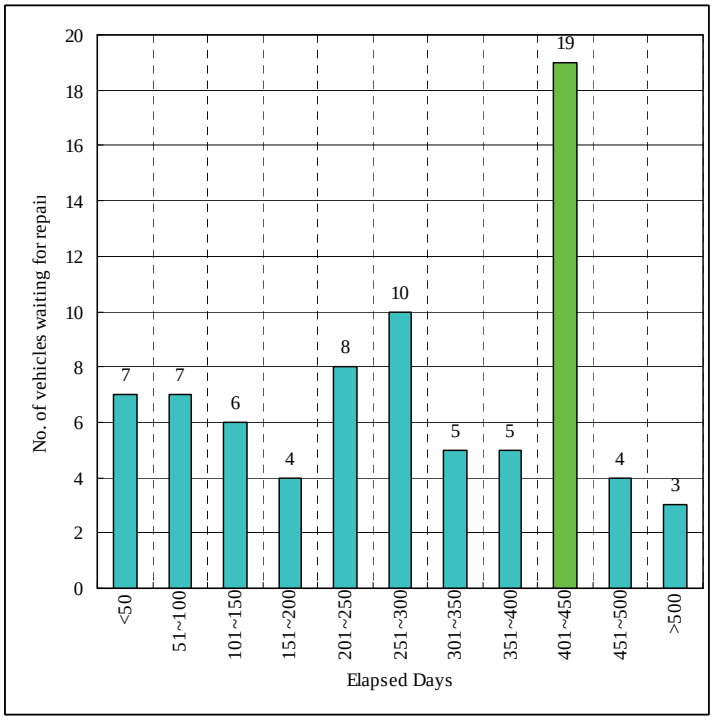


Figure 4.4-8 Present Repair Work Flow of Collection Vehicles

Repair works at local workshops took a lengthy period for placing an order and the time for procurement of spare parts and repair works. As of August 2004, number of vehicles waiting for repair work was 60 units, and the number increased to 70 units in March 2007 and 78 units in August 2007. Accordingly, the vehicles had to wait for a long time before returning to the service. The below figure indicates the state of elapsed time of the vehicles waiting for the completion of repair work as of August 2007. The figure shows that about one third of vehicles are waiting more than one year.



Source: Repair workshop

Figure 4.4-9 Elapsed Time of Collection Vehicles Waiting for Repair Work (as of August 2007)

(b) Study on Improvement at Repair workshop

There were about 30 mechanics and helpers working in the Repair workshop. The quality of repair works, based on their skill and management still needed improvement for better services of maintenance and repair works. There were two alternatives to improve the workshop services. The first alternative was to invite an expert mechanic to the Repair workshop for conducting training and management of repair works. The second alternative was to dispatch a chief mechanic(s) for training in foreign countries such as in Japan.

In addition, the tools and equipment for repair works were old and not sufficient for performing good repair works. Repair workshop listed necessary tools and equipment and this list was reviewed to prepare for procurement hereafter.

Based on the analysis described above, the problems requiring further study and resolution were summarized as shown below.

a) Procedural matters

- Improving managerial level personnel skills for workshop activities
- Improve spare parts procurement process to shorten time of procurement
- Improve out-sourcing process by making sure that out-sourced repair works cannot be done at the Repair workshop and making the process more transparent and less time consuming

b) Technical matters

- Upgrading skills of the mechanics
- Procurement of required necessary tools and equipment
- Improve quality of procured spare parts

At that time, the repair works were carried out with the limited tools and equipment. This situation was not preferable to the quality services and the spending time for the repair work. A list was drafted as tabulated below for the major tools and equipment for procurement at the earliest opportunity. .

Table 4.4-17 Requirement of Tools and Equipment for Vehicle Repair Work at Mechanical Repair workshop

No.	Name of Tools & Equipment	Required Quantity	Existing Quantity	Estimated Units Price (Taka)	Remarks
1.	Wheel mounted jack (Max. 50ton)	5		45,000	
2.	Mini-hydraulic crane	2		1,200,000 - 1,500,000	For lifting engines
3.	Hand drill	10	3	5,500	
4.	Floor mounted drill machine	5	1	52,000	
5.	Hand grinding machine (heavy duty)	10	2	6,000	
6.	Hand cutter machine	5		12,500	
7.	Ring spanner (different sizes)	20	6	4,500	Existing tools not workable
8.	Socket wrench set (different sizes)	20	8	4,800	Existing tools not workable
9.	Pipe wrench set (different sizes)	5		8,500	
10.	Drill bit (different sizes)	10		6,000	
11.	Top set (thread cutting)	10		9,000	
12.	Welding machine (heavy duty)	5	4	75,000	Existing tools very old
13.	Hydraulic shearing machine (6mm)	2		700,000	
14.	Power grease gun	10		28,000	
15.	Sleeve/liner puller	5	3	5,000	Existing tools not workable

Source: JET

The Mechanical Repair workshop has been practicing book keeping for the stocks of spare parts, repair works at the workshop and those of local workshops as follows, and the relation with the repair work flow as shown in Figure 4.4-10

1. Stock Book (Prepared for each vehicle model in every fiscal year)

- Recording the spare parts supplied, used and the balance,
- The Central Government Workshop audits the Stock Book every fiscal year

2. History Book (Prepared for individual vehicle and kept up to the end of the vehicle life)

- Recording the history of repair works using and not using spare parts through input from the Stock Book, Repair Job Card, and Stock Book for Outsourced Repair)

3. Repair Job Card (Prepared by Repair workshop every time of required the repair work)

- Start from preparation of a repair requirement slip prepared by mechanics attached to the form of Repair Job Card for approval/supply of spare parts and completion of repair work
- The Central Government Workshop audits the Repair Job Card every fiscal year for cross check with the Stock Book

(a) Stock Book for Outsourced Repair (Prepared for all the models for local repair works (outsourced repair))

- Recording of outsourced repair works together with the spare parts as supplied from the Repair workshop,
- The Central Government Workshop audits the Stock Book for Outsourcing every fiscal year

The conventional method of book keeping was not convenient to look up the status of the remaining balance of stock spare parts and the repair work history of individual vehicle. At first, the most important

book, the stock book, should be computerized and the summary of the inventory of all the spare parts remaining to date should be prepared. A program was prepared with MS Excel for the purpose to summarize the spare parts inventory and saved in the computer of Stock Room. The computer operator was instructed to fill in the records in the Excel program for the trial use for the time being. The summary inventory of spare parts in the proposed table or the modified table was evaluated after the trial period and prepared for all the types/models of the vehicles being repaired in the Mechanical Repair workshop. The conventional book keeping flow and proposed computerization were shown in below.

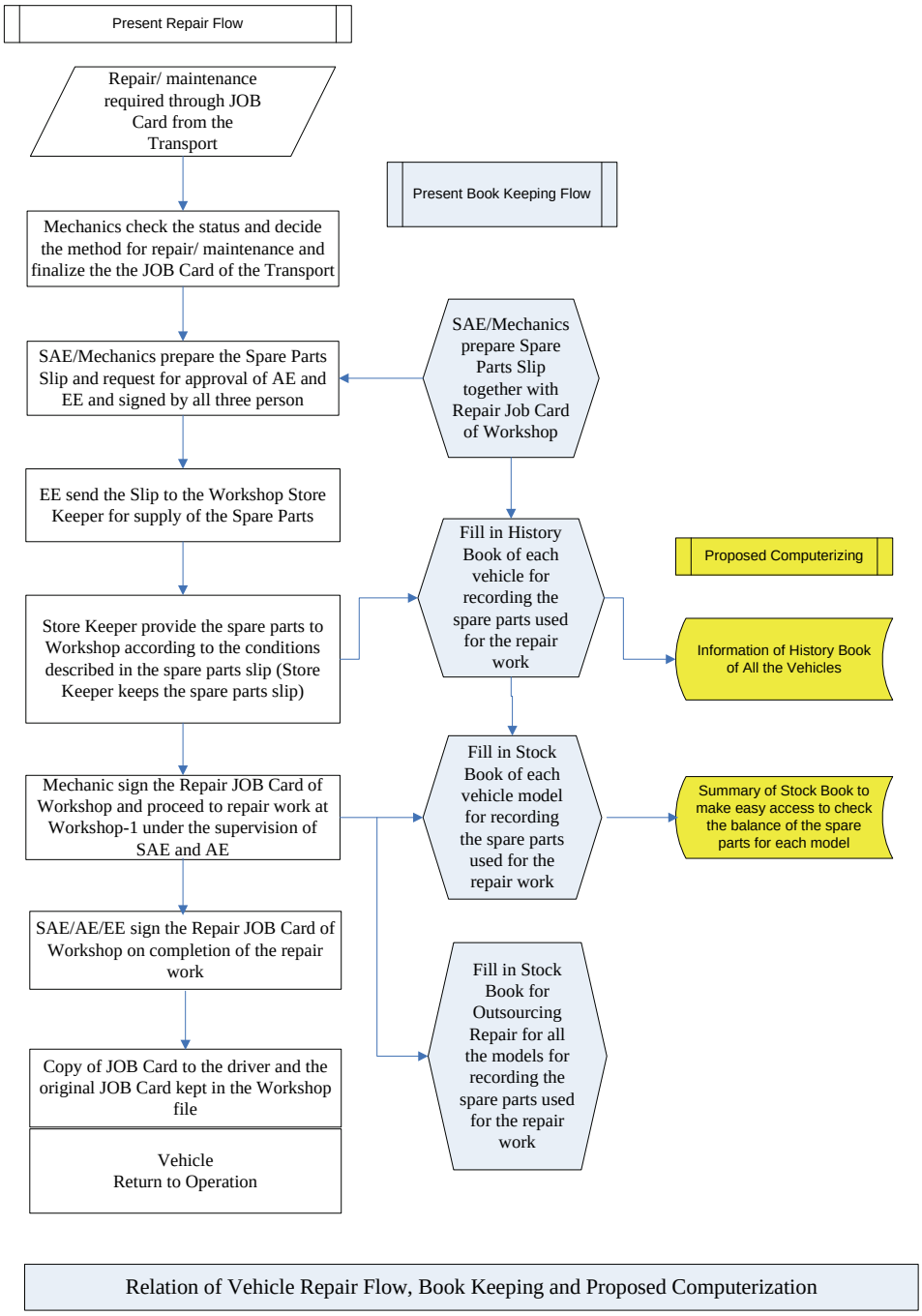


Figure 4.4-10 Current Book Keeping Flow and Proposed Computerization

(c) Implementation of the Improvement at Repair workshop

Under the Project, workshops for management of repair works were held three times in order to improve procurement procedures at the repair workshop of Mechanical-1 of DCC's Engineering Department. Achievements of the workshops are shown below:

- Problems being faced by the repair workshop management in carrying out its tasks were identified.

Those are 1) irregular monitoring and evaluation of activities, 2) lengthy and complicated recruitment of manpower of the workshop, 3) lack of coordination with concerned departments, 4) lack of rational distribution of mechanics and workers and excessive workloads to some officers, 5) shortage of manpower with necessary skills, 6) lack of maintenance manual, 7) difficulties in procurement of quality oils and filters, and 8) delay in purchase or fabrication of spare parts for repair jobs.

- The problems were identified through the processes of; i) exchange views/interviews/discussion with relevant personnel of the repair workshop, ii) holding workshops, and iii) physical inspection of the workshop premises.
- Workshop mechanics have proper guidelines for repair and maintenance of vehicles and equipment, which includes tips to solve the above mentioned problems, identification of recommended grades of oils, preparing maintenance schedules, monitoring and reporting through monthly progress reports, ensuring purchase of proper and quality oils, use of original kits, keeping workplace and tools clean, proper use of tools and avoiding careless use and handling of equipment and tools, using protective gloves and eye shield when necessary, etc., by soft component EGAP.
- Strategic guidelines with recommendations, daily/ regular and accounting, periodic management of expenditure/ transaction, introduction of MIS with newly installed software by the repair workshop, etc., were provided to officials and mechanics of the repair workshop for general service management by the Project with emphasis given to accounting and inventory management and introducing of MIS for proper budgeting of spare parts and outsourcing. Introduction of MIS are partially started by the workshop of Mechanical-1.

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through the Activity 3.3 are shown in the following table.

Table 4.4-18 Good Practices, Problems and Feedback Identified

Good Practices for Successful Implementation	➢ Regular update of data has conducted on collection vehicles that are waiting for repair works. ➢ ,Study on improvement of Repair workshop was conducted , and some identified measures were implemented.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Engineering Department which manage the repair workshop is sometime not willing to provide the actual information to study these issues.
Measures Taken to Solve the Problems	➢ More official and unofficial interaction is needed between the Engineering Department and WMD should be fully functioning so that the cooperation can be increased.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ None 2) Necessity for Reviewing Methodology ➢ Every month one coordination meeting can be arranged between the Executive Engineer of both Engineering Department and WMD so that they can exchange information and speed up the repair of out of order vehicles. ➢ New repair workshop constructed through EGAP is under management of WMD and close corporation of the both repair workshops is necessary. 3) Necessity for Reviewing Expected Results ➢ The monthly vehicles list waiting for repair can give a clear idea on how effective the improvements are. 4) Required Supports from Outside the Group ➢ Understanding of the activities from Workshop is needed. ➢ Further training by outside experts, such as a senior Japanese volunteer for staff of WMD Workshop would be preferable or quality maintenance and repair works of the workshop.

4.4.4 Activity 3.4: To train technicians, repair mechanics, drivers, cleaners, and other workers

(1) Result of Activity

1) Expected Result

Capacity of DCC C/P for collection and transport is developed through mainly on-the-job training (OJT). In parallel with the OJT, it was expected that some training, workshop are held for enhancing their capacity.

2) Actual Result

(a) Training of DCC SWM Staff – CIs, Cleaners, Drivers and Mechanics

A training manual was developed during the Development Study (from 2003 to 2006) for all of CIs, cleaners, drivers and mechanics. The manual was modified based on actual application in experiences. However, the drivers and mechanics had not applied the maintenance in corresponding to the manual because they had want to apply the conventional way. As a result, there were inefficient maintenance works which the mechanics had applied. Project Team revised the manual from view point of duplication of the technic and held a workshop to explain it and get opinions on September 17, 2011. Comments . .

Comments from the participants were as follows:

- Lack of health and safety measures
- Lack of spare parts and maintenance problems for the vehicles
- Fear that moving forward with privatization may result in loss of jobs
- Necessity for health care
- Salary increase
- Necessity for extension of this type of workshops to cover all 7,000 conservancy staff
- Necessity for Ward SWM Office for better management of the services
- Lack of spare parts at the workshop delays the repair and maintenance works tremendously.
- Drivers are sometimes not reimbursed for purchase of simple spare parts.
- No washing facilities are available to wash vehicles and containers.
- Insufficient cooperation are rendered from some PCSPs.
- Prices of some spare parts purchased by the workshop are exaggerated when compared to market prices.
- Access road and working roads at the landfill pose problems for the trucks.
- Drivers fear for the loss of their work due to the privatization schemes they hear DCC is considering.

(b) Training to Engineers

Formulating the plans and programs based on correct and accurate data and information is necessary in order to determine the proper steps for implementing the plan. Evaluation and analysis for every data and information is required to interpret the meaning and to utilize the results for the planning. This mini-work shop started aiming at transferring the analysis processes to the staff of DCC in formulation of the SWM plan and for monitoring the on-going SWM activities as well, especially regarding collection and transportation operation.

After explanation and discussion for the program, DCC appointed two engineers for the trainees. In addition, one engineer proposed by himself to participate to the mini-workshop and it was agreed. Accordingly, there are three participants listed below who joined the Mini-workshop.

- One (1) Engineer from Zone-5 Engineering Office,

- One (1) Engineer from Environmental Circle (Engineer in charge of environmental aspect from Engineering Department),
- One (1) Engineer from Landfill Management Group, Waste Management Division

a) Workshop Schedule

Work schedule of mini-works shop was discussed and agreed to be held twice a week, on Monday and Wednesday afternoons from 15:00 to 17:00 hours. This schedule was flexible for the day of the week and the time but it was agreed to be held twice a week. Followings are the Mini-workshop schedule conducted during the period of January and February 2008.

Table 4.4-19 Workshop Schedule and Contents

Date	Contents
January 23:	Discussion and determining the subject for the mini-workshop
January 29:	Utilization of GPS in Time & Motion Study
February 6:	Handling of GPS, installation, importing data and use of GIS program, (Temporarily suspended due to attendance of GIS training course)
February 18:	Method of analysis of weighbridge data

b) Contents of Technical Transfer Mini-workshop

The contents of technical transfer were prepared for the subjects utilized in formulation of the Clean Dhaka Master Plan as a base, and the analysis of weighbridge data and utilization of GPS in Time and Motion Survey were added. All the subjects discussed and adopted for the subject of the technical transfer are summarized but not limited to the followings.

i) Population and Waste Amount

Domestic Waste Amount Prediction

- Ward-wise population data of Bangladesh Bureau Statistics
- Prediction of future population and ward-wise population prediction
- Waste generation amount survey and unit waste generation ratio per capita per day
- Ward-wise domestic waste generation amount

Prediction of Waste Amount of Commercial Activities and Street Sweeping

- Survey on waste generation amount in commercial area and street wastes
- Assumption of unit waste generation rate of commercial and street wastes
- GIS data used for waste amount generation

ii) Incoming Vehicle Survey at Matuail in 2004 and in April 2007

- Number of collection vehicles procured and in operation
- Survey in dry and wet seasons in 2004,
- Survey in April 2007
- Unit loading rate by the type of vehicles

iii) Weighbridge Data in December 2007 and their Analysis

- Data of weighman-1 and 2 in November and December 2007
- Number of trips and incoming waste amount
- Number of trips by time zone
- Collected waste amount by Ward/Zone

- Collection ratio by Ward/Zone
- Unit loading amount per trip
- Active vehicles by number of trips and brought-in waste amount in December 2007

iv) Time and Motion Survey of Collection Vehicle by GPS

- Purpose of the survey
- Objective vehicles for surveying
- Objective vehicle in Ward 36 and 76
- Method of time & motion survey with GPS
- Processing of survey record
- Analysis of loading, traveling and unloading time

v) Arrangement of Suitable Location for Waste Containers

- Preparation of Ward SWM Map in GIS for the location of containers and dustbins
- Survey for updating and completing the existing locations of containers and dustbins
- Assumption of service area of each container or dustbin
- Planning by GIS for the additional containers or transferring the locations

vi) Planning for Procurement of Collection Vehicles and Waste Containers

- Reviewing and revision of planning policy and strategies for waste collection
- Required number of vehicles in each Ward/Zone
- Aging of collection vehicles and assumption for scrapping of vehicles
- Number and types of vehicles to be procured under the current procurement plan
- Procurement schedule for the vehicles

(2) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through the Activity 3.4 are shown in the following table.

Table 4.4-20 Good Practices, Problems and Feedback Identified

Good Practices for Successful Implementation	➢ Substantial Trainings have been conducted for Mechanics, engineers etc. it also contributed to enhance their motivation.
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Timing of the training is a problem as most of the targeted trainees have to serve almost every day.
Measures Taken to Solve the Problems	➢ Training session can be organized according to the working duty of the persons. Also the day of training can be in weekends.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ This activity is very much helpful for the smooth operation of the other activities. Trained persons can serve DCC better than before. 2) Necessity for Reviewing Methodology ➢ Some training schedule should be made prior to each fiscal year and date and time will be fixed. Then WMD should follow the schedule. 3) Necessity for Reviewing Expected Results ➢ Every year WMD should make some comparative study over the change from the previous year. At least they can make some evaluation on the basis of the cleaning campaign performance during Eid-ul-Azha. 4) Required Supports from Outside the Group ➢ Understanding on the trainings from DCC higher officials is highly necessary.

4.5 Activities for Output 4

4.5.1 Activity 4.1: To develop sanitary landfill (by DCC)

(1) Result of Activity

1) Expected Result

Under this activity, the following works were planned to be conducted.

(a) Construction of Sanitary Landfill Facilities at Matuail Existing Landfill Site:

It was expected to complete construction work at Matuail Existing Landfill Site for all sanitary landfill facilities by June 2007 and to start the operation immediately. It is also expected to submit the Environmental Impact Assessment for Matuail extension to Department of Environment (DOE) in the Ministry of Environment and Forest for the Environmental Clearance Certificates.

(b) Periodical Development of Facilities for Regular Operation:

Periodical development of the sanitary landfill facilities are expected to be done with passages of time to maintain and manage sanitary landfill operation smoothly. It was also expected to secure necessary budget to continue this development work in each financial year.

(c) Development of Matuail Expansion for Future Sanitary Landfill:

It was expected to develop Matuail expansion by June 2007 for future sanitary landfill operation.

(d) Environmental Impact Assessment for Amin Bazar New landfill

It was expected to formulate Environmental Impact Assessment for Amin Bazar new landfill before start of construction work and submit to DOE for Environmental Clearance Certificates.

(e) Securing Necessary Budget for Construction of Amin Bazar New Landfill

It was expected to secure the necessary budget for construction of sanitary landfill facilities at new Amin Bazar landfill site.

2) Actual Result

The results of Activity are summarized below.

(a) Sanitary Landfill Facilities Constructed at Matuail existing landfill site:

Development Project Performa for Landfill Improvement Project to expand the area and to construct relating facilities in Matuail Landfill site with Japan Dept Cancelation Fund at Matuail was approved by the Executive Committee of the National Economic Council (ECNEC) in October 2005. Selection process for the consultant and contractor took quite a long time and it was completed in March 2006. Then construction works started. Although the start of work was delayed, the Project Team planned to finish the construction work by June 2007. However, due to prolonged rainy season and lingering of fund release by the government, construction work had not progressed as scheduled.

The opening ceremony for Matuail Sanitary Landfill held on October 3rd, 2007 and attended by the Honorable Mayor of DCC, H.E. Ambassador of Japan, Resident Representative of JICA Bangladesh Office, Vice Chancellor of BUET, high ranking officials of DCC, representatives from related government agencies and a large number of guests. This event received much attention in the media as the first sanitary landfill in Bangladesh and was a source of pride and motivation for WMD. Table 4.5-1 shows the actual construction schedule at Matuail Existing Landfill Site.

Table 4.5-1 Construction Schedule at Matuail Existing Landfill Site

Sl. No.	Item	2006												2007												2008						
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
1	Final soil cover																															
2	Onsite road																															
3	Rain water drainage																															
4	Gas vent pipe																															
5	Leachate pipe																															
6	Washing pool and machine																															
7	Truck Scale																															
8	Flood light																															
9	Control building and workshop																															

After inauguration, though sanitary landfill operation started in the existing landfill site, yet leachate treatment pond and some other facility construction was not completed. Total completion of the construction work of some necessary facilities was delayed to June 2008. Finally all of the construction works were completed by June 2008 and full scale sanitary landfill operation started.

(b) Periodical Development of the Facilities for regular operation:

The operation of the existing Matuail landfill site has been started since October 2007 after the official inauguration. Since the inauguration, DCC has been keeping a budget of Tk. 2 crore in each financial year for the periodical development of the facilities, including construction of working road and platform, gas vent pipe extension etc, for the operation and maintenance of the landfill.

Landfill Management Unit (LMU) utilizes this budget to construct platforms, access road, application of final soil cover, slope management, maintenance of leachate and gas vent pipe network etc. LMU constructs two platforms each year to facilitate smooth dumping operation in rainy and dry seasons. However, sometimes lingering of tendering process to select and appoint the contractor delayed the construction works substantially and hampered the operation.

(c) Development of Matuail Expansion for Future Sanitary Landfill:

It was expected to develop the Matuail expansion (20ha) area for the future sanitary landfill operation by June 2007. Protection embankment and cross-embankment, brick road, four reinforced concrete (RC) permanent platforms, leachate collection pipes at the bottom, leachate collection wells, etc., have been constructed to facilitate future sanitary landfill operation. Construction works were completed in June 2008. Table 4.5-2 shows actual construction schedule of Matuail Expansion.

Table 4.5-2 Construction Schedule of Matuail Expansion

Construction Schedule Landfill Improvement Project at Matuail Expansion site

Sl. No.	Item	2007												2008											
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
1	Main embankment																								
2	Block Embankment																								
3	Onsite road and platform																								
4	Leachate treatment pond & facility																								
5	Leachate pipe network																								

(d) Environmental Impact Assessment for Amin Bazar New Landfill

Another JDCF Project was Project for Construction of Amin Bazaar Landfill whose components were construction of another landfill site at west-north out of DCC and provision of equipment. As the land acquisition and dyke construction was completed by DCC by June 2006, Bangladesh University of Engineering and Technology (BUET) was assigned to conduct the Environmental Impact Assessment (EIA) for the landfill improvement at Amin Bazar. However, due to a writ petition by Bangladesh Environmental Law Association (BELA) against the development works, process for EIA was suspended.

According to the writ petition, it is not allowed to carry out the construction work in at Amin Bazar by the law because the site is located in flood plain zone. DCC has emphasized to resolve the BELA issue first. At present court verdict is not to dump waste in the Amin Bazar landfill site. The trial is not completed now. The high court requests DCC to conduct environmental survey at the site and DCC will submit the result end of Match, 2011. Final conclusion will be issued after the submission.

(e) Securing Necessary Budget for Amin Bazar New Landfill

Land acquisition for Matuail Extension and Amin Bazar New Landfill was completed in December 2005 and construction of the embankment of Amin Bazar was finished in June 2006 through Infrastructural and Environment Improvement Project.

DPP for the Landfill Improvement Project at Amin Bazar New Landfill was prepared and submitted in June 2007 for approval by ECNEC. ECNEC approved the Amin Bazar landfill project on September 25th, 2008. In the annual development program, 29 crore taka has been allocated in the 1st financial year financed with Japan Debt Cancellation Fund (JDCF). Around 27 crore taka was spent for procurement of 27 container carriers, 51containers and six heavy equipments, with the remainder spent for civil works such as weighbridge, soil cover and platform construction. Additional 35 crore taka has been allocated also financed with JDCF for the 2nd financial year(FY 2009/2010), when construction works of all the landfill facilities has been scheduled to be completed. However, due to some inconvenient devided seven packages in construction works from political viewpoints, the completion was delayed to the 3rd financial year(FY 2010/2011). Table 4.5-3 shows the actual construction schedule of Amin Bazar New Landfill.

Table 4.5-3 Construction Schedule of Amin Bazar Landfill

Sl. No.	Item	2009												2010												2011						
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
1	Embankment protection			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■													
2	Final soil cover																■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
3	Onsite road			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■							
4	Rain water drainage																■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
5	Gas vent pipe																■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
6	Leachate pipe																■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
7	Washing pool and machine								■	■	■	■	■	■	■	■	■	■	■	■	■											
8	Truck Scale								■	■	■	■	■	■	■	■	■	■	■													
9	Flood light													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
10	Control building and workshop																															

Out of seven tendering packages for the construction work at Amin Bazar landfill works of five packages have been completed and other two packages will be completed by Jun1, 2011. The landfill site has received the solid waste since June 2006. Completed construction works include the work for four platforms, installation of four flood light towers, slope protection, raising the height of embankments, construction of the RC road, control building, electrical sub-station, workshop, security barrack, car washing facility, deep tube wells, weighbridge, four guard rooms, leachate treatment pond, etc., have been completed. However, the remaining packages were delayed due to inconvenience of site condition. As new electricity connection is officially suspended by the government, electrical work packages were delayed. Beside, due to insufficient waste dumping, the ground level had not reach to the optimum level, and installation of soil cover, the leachate collection and gas vent pipe network, etc., was not possible to start earlier. Construction works will continue according to the revised plan and schedule.

		
Unplanned open/crude dumping system was converted into environment friendly and sound sanitary dumping system with soil covering	Vertical heap of waste has been converted into gentle slope resulting better working environment and good appearance	Explosion and fire hazards have been stopped by the systematic collection of leachate through leachate collection pipes and emission of gases through gas vent pipes

Figure 4.5-1 Transformation from Open Dumping to Sanitary landfill at Matuail

		
Final soil cover	Operation road	Rainwater drainage
		
Gas vent pipe	Leachatecollection pipe	Car washing facility
		
Weighbridge	Flood lighting pole	Control and rest rooms

Figure 4.5-2 Facilities Constructed at Existing Matuail Landfill

		
Main embankment	Platform	Leachate treatment pond

Figure 4.5-3 Facilities Constructed for Matuail Expansion

		
Embankment protection	Onsite road	Platform
		
Weighbridge	Car wash facility	Leachate treatment pond
		
Control and Rest room	Workshop	Flood lighting pole

Figure 4.5-4 Facilities Constructed at Amin Bazar Landfill

(2) Good Practices, Problems and Feedback Identified

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.5-4.

Table 4.5-4 Good Practices, Problems and Feedback identified

Good Practices for Successful Implementation	【Matuail landfill site】 ➢ Prepare Tender Documents: DCC was able to make tender documents with himself. ➢ Prepare Design documents: DCC employed a consultant and was able to carry out a design of sanitary landfill. ➢ Construction Supervision: DCC was able to do execution management almost without relying on consultant. DCC held on meetings for construction schedule and performed an effort for management of contractor 【Amin Bazar landfill site】 ➢ Prepare Tender Documents: DCC was able to make tender documents with himself. ➢ Prepare Design documents: Because it was a design of the second sanitary landfill, DCC was able to design it without employing a consultant. ➢ Construction Supervision: DCC was able to do execution management almost without relying on consultant. DCC held on meetings for construction schedule and performed an effort of management of contractor.
Problems, Obstacles and Limitations Hindering Successful Implementation	【Matuail landfill site】 ➢ DCC cannot submit EIA to DOE yet but it is very important. ➢ Management of contractor is difficult. 【Amin Bazar landfill site】 ➢ DCC is disputing with BELA for the site of landfill and has not carried out EIA. ➢ Management of contractor is difficult.
Measures Taken to Solve the Problems	➢ There is no landfill guidelines by DOE, and it is difficult for DCC to defend and get approval for EIA. Initiative for developing landfill guideline/standard has been initiated by DCC.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ DCC plan to construct new landfill and it is expected that landfill apply many experiences of this Project. Besides, it is expected that many experiences of this Project disseminate to other city corporations in Bangladesh. ➢ EIA for both landfill sites has not yet completed. Even though the no guideline is problem, WMD should try to overcome the problem regarding EIA through experience of the Projcet. ➢ Construction did not completed as schedule due to low ability of the construction company. DCC should evaluate ability of the construction companies and select proper company of future project for construction and/or expansion. 2) Necessity for Reviewing Methodology ➢ Nothing in particular. 3) Necessity for Reviewing Expected Results ➢ Nothing in particular. 4) Required Supports from Outside the Group ➢ It is needed for constructing new landfill to adopt opinions of drivers of heavy equipments and collection vehicles.

4.5.2 Activity 4.2: To operate and manage sanitary landfill

(1) Result of Activity

1) Expected Result

(a) Staffing for Landfill Operation as per WMD Organogram

It was expected to fulfill requirements of permanent staffs for sanitary landfill operation. At the same time it was also expected to fulfill the requirements of permanent staffs for Amin Bazar land site staffs as well.

(b) Ensuring Sufficient Heavy Equipment

Smooth heavy equipment operation is the core part of sustainable and systematic landfill operation. It is expected that through full deployment of heavy equipment of WMD, the landfills are managed and operated by LMU.

(c) Securing Operation Budget

It is necessary to construct platforms and working road, and to maintain landfill facilities regularly. Hence, it was expected that DCC allocates necessary amount of budget every year for well managed operation at the landfill sites.

(d) Waste Filling work

It was expected that waste placing, compaction, soil covering on wastes and slope maintenance are performed according to the Operation and Maintenance (O&M) manual. It was expected that LMU prepares and executes a systematic plan to ensure well-managed waste filling work throughout the year. It was also expected that the heavy equipment spreads waste on a gentle slope and compact it properly, and that LMU provides soil cover regularly.

(e) Operation in the Rainy Season

The rainy season is the most challenging time for landfill operation. It was espected that LMU learns special preparation for the drainage network, access road, dumping platform that is required during the rainy season.

(f) Weekly Meetings, Coordination Meetings and Workshops

Team work of different working groups at landfill site can be well coordinated through regular meeting of the staff to share and discuss about different landfill operation issues and thus to take necessary decisions. Beside that in DCC mechanical department responsible for heavy equipment operation, transport department managing the waste carrying vehicles and waste management department managing the staffs at landfill site. Hence, it is also necessary for having coordination meetings among these inter related departments to discuss critical or major issues for landfill operation. It was expected that the landfill staff hold weekly meeting, and that as at landfill three different departments hold coordination meetings.

(g) Preparation Landfill O&M Manual

It was expected to develop a landfill O&M manual for the sanitary landfill operation to streamline the landfill activities and develop a well-organized landfill management system.

(h) Vehicle Control

Disciplined control of waste carrying vehicles in the landfill site is essential for systematic landfill operation. It was expected that LMU controls the vehicle drivers at site to follow the rules of sanitary landfill operation.

(i) Prepare Operation Record

It was expected that each of the working groups prepares operation record of their activities at landfill sites and submit to relevant managers of DCC.

2) Actual Result

(a) Staffing for Landfill Operation as per WMD Organogram

Necessary minimum 48 staffs of LMU were temporarily arranged for Matuail Landfill to operate the landfill appropriately. However, required staffs, in particular person in charge of the management have not been fully posted yet according to the WMD organogram. Executive Engineer (Final Disposal) of WMD, has not been selected, and there is a shortage of number of Sub-Assistant Engineers who is noe appointed for landfill operation. The Project Director (PD) of LIP is taking necessary actions at the present situation.

Table 4.5-5 Present Number and Necessary Number of Landfill Staffs

	Day Shift (7:00am-3:00pm)	Afternoon Shift (3:00pm-11:00pm)	Night shift (11:00pm-7:00am)	Total
Assistant eng.	1 (1) 9:00am-5:00pm		---	1 (1)
Sub-Assistant eng	0 (1)	0 (1)	0 (1)	0 (3)
Dumping Instructor	5 (4)	3 (4)	3 (4)	11 (12)
Computer operator	2 (2)	2 (2)	2 (2)	6 (6)
Car wash	2 (3)	---	---	2 (3)
Cleaner	8 (10)	---	---	8 (10)
Assistant Mechanics	2 (1)	---	---	2 (1)
Bulldozer Operator	3 (2)	3 (1)	3 (2)	9 (5)
Excavator Operator	2 (2)	2 (1)	1 (1)	5 (4)
Wheel Loader Operator	1 (1)	1 (1)	1 (1)	3 (3)
Dump truck Operator	---	---	3 (3)	2 (3)

( ): Figures in bracket are necessary number of landfill staff

As construction work at Amin Bazar Landfill Site is at completion stage, necessary staff allocation is immediately required. LMU has sent the requirements for the staff at Amin Bazar Landfill. Even though assistant Engineer is appointed, WMD headquarters are taking necessary steps for allocation of the other staffs.

(b) Ensuring Sufficient Heavy Equipment

The necessary number of the heavy equipment for waste filling work is three Bulldozers, three Excavators, one Wheel Loader and three Dump trucks. Three Bulldozer, three Excavator and one Wheel loader have been arranged at Matuail, and a dump truck is arranged when LMU carry out daily soil cover work. Two Bulldozers and two Excavators are procured by Amin Bazar Project.

Table 4.5-6 Present Allocation of Landfill Equipment

	Waste Filling				Construction Work*1	Total
	Day Shift (7:00am-3:00pm)	Afternoon Shift (3:00pm-11:00pm)	Night Shift (11:00pm-7:00am)		Overtime (2:00pm-5:00pm)	
			Regular Platform	20-ton trailer's Platform		
Bulldozer	3	---	(1)	(1)	(1)	3
Excavator	2	---	---	(1)	(1)	2
Wheel Loader	1	(1)	---	---	(1)	1
Dump Truck	---	---	---	---	3	3

*1: Construction work means soil cover and extension of Gas pipe.

*( ): Figures in bracket are presently being used in another shift.

(c) Securing Operation Budget

Since inauguration of Matuail Sanitary Landfill, DCC has been allocating Tk. 2 crore budget every year for the operation and maintenance of the landfill. LMU uses the budget for construction of RC road and platforms for wet and dry seasons, extension of gas vent pipe, etc. As a part of periodical activities of landfill, it is highly necessary to appoint the contractor on time to execute the developments works at the landfill site. However, sometimes due to delay in official approval procedures, contractors move to the site lately and dumping operation is hampered. For smooth and systematic landfill operation it is vitally necessary to complete the tendering process on time.

		
RC road	Brick paved road	Platform for rainy season

Figure 4.5-5 Construction Work at Matuail Landfill

(d) Waste Filling Work

Waste placing, compaction soil covering by heavy equipment on waste to prevent from insect and odor and slope preparation to protect the slope by rain water are almost properly performed according to the O&M manual. LMU has been preparing plans of dumping operation mentioned in (g) and executing accordingly. However, the site manager has to closely monitor the dumping operation and instruct the landfill inspectors and instructors. Container carrier drivers sometimes unload wastes on the emergency platform and roadside without obeying the instructions of the dumping instructor are creating problem.

		
Waste unloading	Waste compaction and spreading	Slope arrangement

Figure 4.5-6 Current Situation of Waste Filling Work

Soil covering has been the most critical issue for the landfill operation at Matuail. Considering the expensive cost of soil, LMU decided to use old waste as material for daily soil covering. The soil covering work has started since the end of February 2010, but it is still not a regular work of landfill operation. While LMU used old wastes for daily soil covering during the wet season, they became very muddy. Hence, LMU has decided not to carry out daily soil covering during the wet season as it may not be fruitful.

Non-cooperation from the heavy equipment operators had always been the critical issue for smooth landfill operation. However, through gradual awareness raising and continuous instruction from the concerned authority, now the operators are almost convinced to follow the instruction of dumping instructor. Dumping instructors are managing the slope arrangement properly.

(e) Operation in the Rainy Season

From the beginning of sanitary landfill operation, LMU has been facing severe problem during the rainy season. From experiences gathered early seasons, LMU now prepares for the rainy season beforehand. Cleaning of drainage channels thoroughly, maintenance of leachate pipes, construction and management of temporary drains, re-circulation of treated leachate from the leachate treatment ponds, planned use of the steel plates to ease the vehicle movement, etc., are the major activities adopted for the rainy season. LMU has also used steel plates on the dumping platform on which wastes are unloaded. Through the planned initiatives taken by LMU, rainy season operation has been much improved recently. However, it is necessary to finish construction of rainy season platform on schedule to avoid any disruption of dumping operation.


Shifting steel plate


Installing steel plate


Preparing temporary drains

Figure 4.5-7 Preparation for Operation in Rainy Seasons

(f) Weekly Meeting, Coordination Meeting and Workshops

WMD (LMU), Mechanical Circle of Engineering Department and Transport Department are responsible to operate landfill in Matuail. Cooperation between these three departments is necessary for appropriate and smooth management of the landfill site. Therefore, LMU has gathered the staff of each working groups once every week and discussed about the situation and problems on O&M of the landfill, schedule of the future waste filling and construction work. In addition, LMU has organized workshops regularly to facilitate open discussion among all landfill staffs with high officials regarding problems on O&M or investigations for improvement of landfill management, etc.


Weekly meeting



Workshop

Figure 4.5-8 Weekly Meeting and Workshop

(g) Preparation of Landfill O&M Manual

Initially a draft operation and maintenance manual for the landfill site was prepared by JET, which was later discussed and reviewed by JET, LMU, and BUET. The manual has been prepared in both English and Bengali. The manual describe 1)maintenance method for concerning facilities, 2) operation for the landfill site, 3)environmental management, 4)safety closure. PD of LIP made a good suggestion to install three type of billboards displaying 1) 'Do not dumping here' at area not allowed to unload the waste, 2)' Road close' to weigh the amount and 3)simple dictation, instead of supplying manual so that it is easily understandable for the landfill site staffs. Now pictorial pocket size manual has also been developed.

(h) Vehicle Control

Although it was difficult at the beginning to convince the vehicle drivers to follow the sanitary landfill disciplines, through continuous efforts made by WMD (LMU),, vehicle drivers gradually understood the importance of their disciplined activities at the landfill. Now, drivers are motivated and almost following the LMU instructions. However, sometimes container carrier drivers still unload wastes on the emergency platform or non-designated platform and roadside without obeying the instructions of the dumping instructor is creating problem. LMU installed direction signboards and most drivers followed it, but some drivers are still disposing waste on the roadsides in defiance of the instructions.



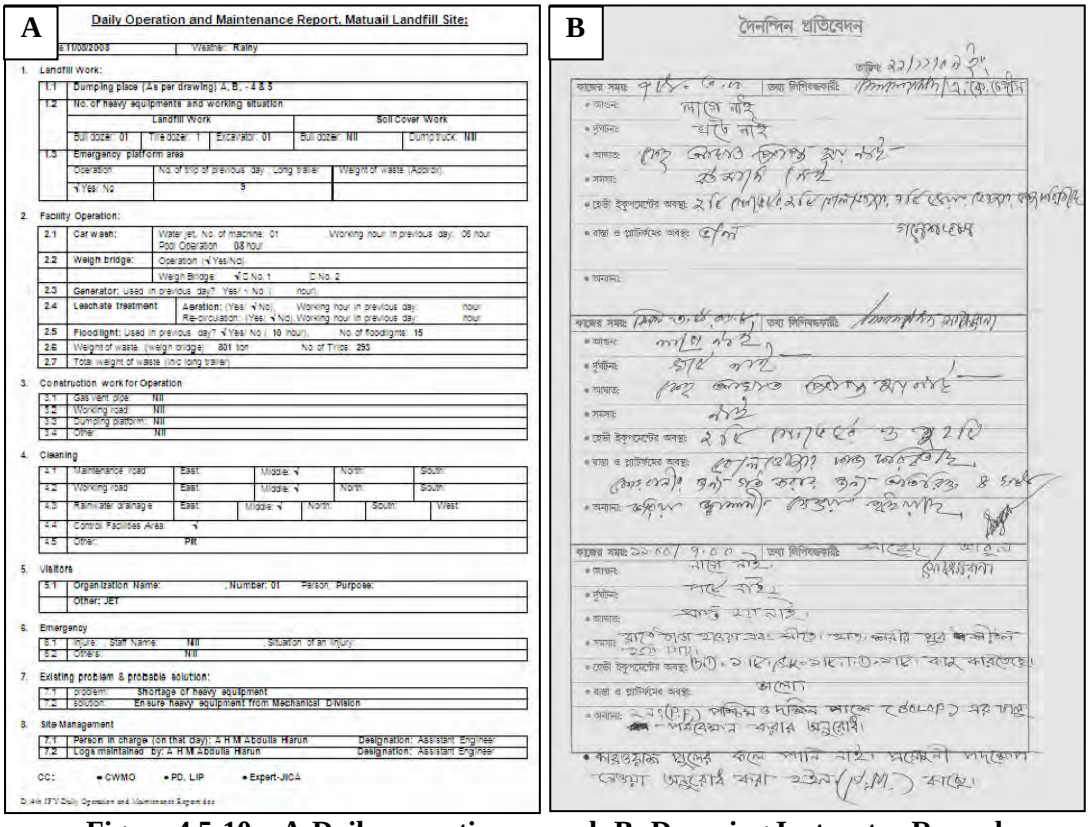
Figure 4.5-9 Signboards for Vehicle Control

(i) Preparation of Operation Records

LMU has developed a well-organized reporting system on landfill operation. Three types of the reports as followed are being prepared regularly to record O&M status of the landfill site.

i) Daily Operation Records

Site manager regularly prepares the daily operation records that describes information on the total trips, total waste amount transported to the landfill, heavy equipments deployment and operation, dumping location, problems and probable solution, site cleaning, etc., that affects O&M of the landfill site. Daily Operation Record is shown as Figure 4.5-10A.



A

Daily Operation and Maintenance Report, Matuail Landfill Site:

Weather: Rainy

1. Landfill Work:

1.1	Dumping place (As per drawing) A, B, - 4 & 5					
1.2	No. of heavy equipments and working situation					
	Landfill Work			Soil Cover Work		
	Bull dozer: 01	Tire dozer: 1	Excavator: 01	Bull dozer: Nil	Dump truck: Nil	
1.3	Emergency platform area					
	Operation:	No. of trip of previous day: Long trailer		Weight of waste (Approx):		
	√Yes/ No	5				

2. Facility Operation:

2.1	Car wash:	Water jet, No. of machine: 01 Working hour in previous day: 08 hour Pool Operation 08 hour
2.2	Weigh bridge:	Operation: (√Yes/No)
		Weigh Bridge: √ No. 1 No. 2
2.3	Generator: Used in previous day? Yes/ √ No (hour).	
2.4	Leachate treatment	Aeration: (Yes/ √No), Working hour in previous day: hour Re-circulation: (Yes/ √No), Working hour in previous day: hour
2.5	Floodlight: Used in previous day? √Yes/ No (10 hour), No. of floodlights: 15	
2.6	Weight of waste (weigh bridge): 801 ton No. of Trips: 293	
2.7	Total weight of waste (Inc long trailer)	

3. Construction work for Operation:

3.1	Gas vent pipe:	Nil
3.2	Working road:	Nil
3.3	Dumping platform:	Nil
3.4	Other:	Nil

4. Cleaning

4.1	Maintenance road	East:	Middle: √	North:	South:	
4.2	Working road	East:	Middle: √	North:	South:	
4.3	Rainwater drainage	East:	Middle: √	North:	South:	West:
4.4	Control Facilities Area:	√				
4.5	Other:	Pit				

5. Visitors

5.1	Organization Name:	Number: 01	Person:	Purpose:
	Other: JET			

6. Emergency

6.1	Injure: Staff Name:	Nil	Situation of an injury:
6.2	Others:	Nil	

7. Existing problem & probable solution:

7.1	problem:	Shortage of heavy equipment
7.2	solution:	Ensure heavy equipment from Mechanical Division

8. Site Management

7.1	Person in charge (on that day): A H M Aboulls Harun	Designation: Assistant Engineer
7.2	Logs maintained by: A H M Aboulls Harun	Designation: Assistant Engineer

CC: • CWMO • PD, LIP • Expert-JICA

D:\4th JPY Daily Operation and Maintenance Report.doc

B

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Figure 4.5-10 A-Daily operation record; B- Dumping Instructor Record

ii) Dumping Instruction Records

Dumping instructors of each shift prepares the dumping instruction records with written down information on work conditions, heavy equipment conditions, accidents, working road & platform conditions, etc. Figure 4.5-10 B shows Dumping Instructor Record.

iii) Weighbridge Record

From the very beginning of sanitary landfill operation at Matuail, drivers of waste carrying vehicles were not much willing to weigh their vehicle at weighbridge. LMU has been trying to convince and motivate

the drivers to weigh the wastes and it was improved through a number of initiatives. There was a significant improvement in waste weighing because the main road in the landfill site was blocked and all the vehicles were diverted through weighbridge during the end of October 2010. Beside, the weighbridge operators regularly keep records of number of vehicles whose wastes were not weighed. It show that once WMD headquarter instruct drivers to weigh the amount, number of the truck which not weigh is decreased. However, the number would increase and become same lever. The number was reduced drastically since January 2011

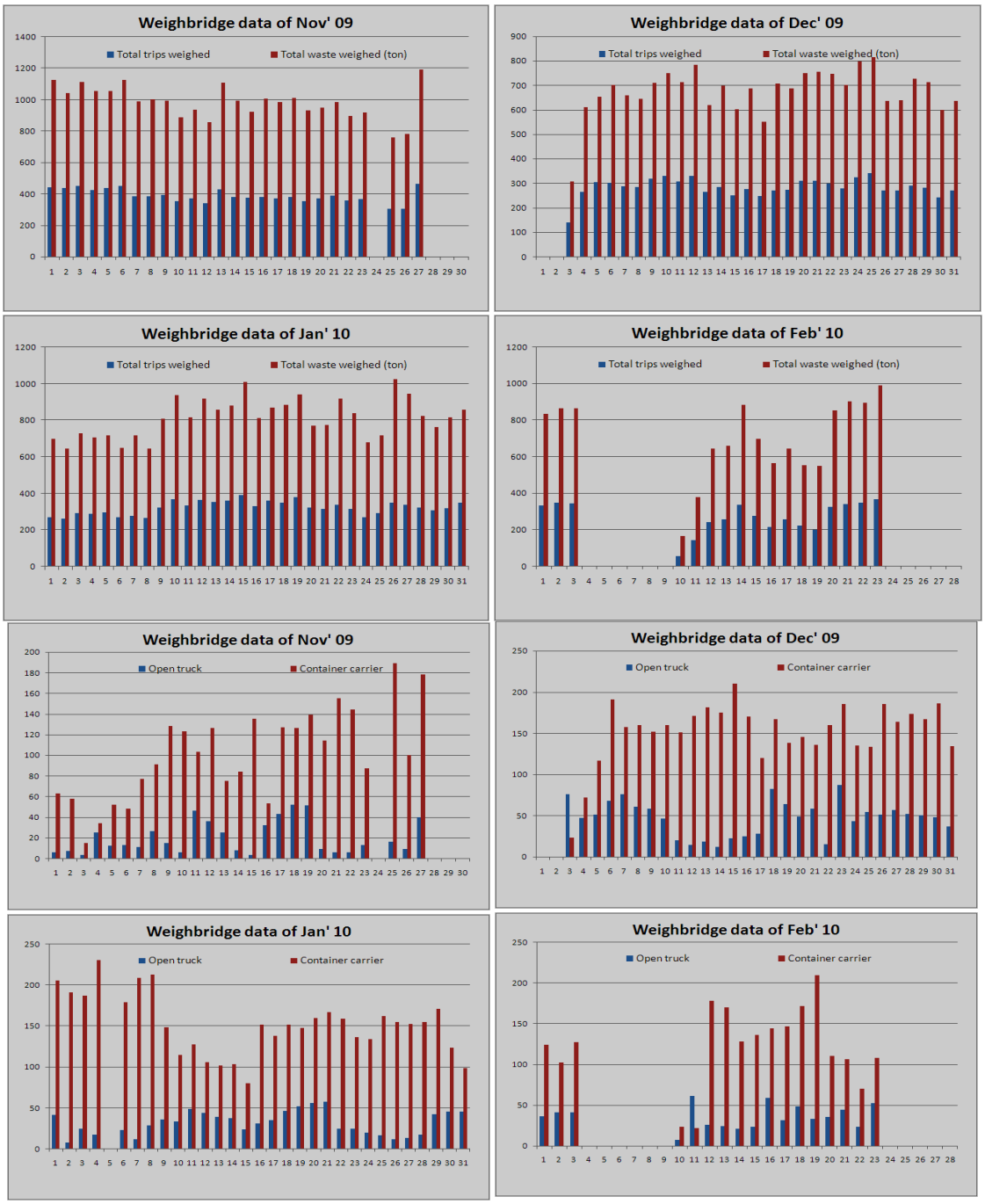


Figure 4.5-11 Number of Container Carriers and Open Trucks Not Weighbridge (November 2010 to February 2010)

iv) Good Practices, Problems and Feedback

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.5-7.

Table 4.5-7 Good Practices, Problems and Feedback Identified

Good Practices for Successful Implementation	【Matuail landfill site】 ➢ Even though management of the landfill sites under WMD, Engineering Department and Transport Department have responsibility for heavy equipment and waste collection vehicles, respectively. ➢ Coordination meeting: WMD carried out coordination meeting to report the situation and to discuss problems with Mechanical Circle of Engineering Department, Transport department. ➢ Weekly meeting: Site manager convene weekly meeting where representatives from each of the work groups attend. ➢ Reporting system ➢ Daily records: Site manager prepares records of their daily activities regularly. ➢ Site report: Dumping inspector, dumping instructors keep dumping instruction records. ➢ Weighbridge records: Weigh bridge operators record the information of all waste carrying vehicles that enter into the sites. They also keep record of the vehicles not passing through the weighbridge. ➢ Proper Operation in the Rainy season ➢ Temporary drainage: LMU constructs temporary drainage beside the working road, dumping platforms to facilitate smooth drainage of rainwater. ➢ Steel Plate: LMU uses steel plates on the brick road during the rainy season to ease access of the waste carrying vehicles to the dumping platform. ➢ Proper temporary road and Platform plan ➢ Signboards: LMU installed signboards to control the waste carrying vehicles to designated dumping places. ➢ Slope management by LMU: LMU performs the slope management using proper marking and instruction to the heavy equipment operators. ➢ Workshop: LMU arranges workshops regularly to develop the capacity of the site staffs.
Problems, Obstacles and Limitations Hindering Successful Implementation	【Matuail Landfill Site】 ➢ Staff requirement has not been fulfilled yet. ➢ Operation time extends 24 hours a day. 【Amin Bazar Landfill Site】 ➢ LMU has not been set up yet.
Measures Taken to Solve the Problems	【Matuail Landfill Site】 ➢ After staffing of WMD is completed, it is expected that staff requirements for landfill sites will be resolved. 【Amin Bazar Landfill Site】 ➢ WMD is considering the LMU set up for Amin Bazar landfill with priority.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ It is hoped for lasting the Good Practices to employ LMU in Matuail landfill site continuously. ➢ LMU in Matuail has acquired sufficient experience and knowledge on sanitary landfill site through the Project. They should teach LMU in Amin Bazar on their experience as TOT. 2) Necessity for Reviewing Methodology ➢ Proper covering soil over the waste has not carried out, because of operation for 24 hours, around six hours in Japan. Time for receiving wastes should be shorten gradually to secure time for cover soil. 3) Necessity for Reviewing Expected Result ➢ Nothing in particular. 4) Required Supports from Outside the Group ➢ For the management of waste collection vehicle drivers, it is inevitable to have support from Management and Coordination Group and Collection and Transport Group.

4.5.3 Activity 4.3: To conduct environmental monitoring

(1) Result of Activity

1) Expected Result

(a) Environmental Clearance Certificate by DOE

It is requested special consideration for landfill site to treat landfill gas, methane, and leacheat. Environmental management including monitoring is an essential part of the sanitary landfill operation. It was expected that for each of the two landfill sites DCC carries out Environmental Impact Assessment (EIA) before the construction works proceed, which shall include the Environmental Management Plan (EMP) for the respective sites. Environmental Clearance Certificate (ECC) shall be received from DOE.

(b) Regular Environmental Monitoring

It was expected that LMU regularly monitors the landfill gas, leachate and surface water quality using onsite testing kits.

(c) Environmental Monitoring as per the EMP

DCC should follow EMP approved by DOE and conduct the environmental monitoring.

2) Actual Result

(a) Environmental Clearance Certificate by DOE

DCC engaged BUET to carry out EIA for the Matuail Landfill. Accordingly BUET prepared the EIA report which included the EMP. However, as there is no landfill standards on environment in Bangladesh, it seemed that DCC could not obtain ECC from DOE. Moreover, relationship between DCC and DOE is not very comfortable to get approval of the EIA. Hence, DCC has not submitted EIA to DOE.

In the case of Amin Bazar Landfill Site, BUET was also engaged to carry out the EIA. However, due to writ petition by BELA which not allow to construct landfill site at flood area, BUET refrained from conducting EIA. However, BUET will carry out the EIA once when BELA issue is resolved.

(b) Regular Environmental Monitoring

In November 2007, JET supplied to DCC field test equipment to monitor landfill gas, leachate and surface water and demonstrated the landfill staffs to carry out the environmental monitoring with the equipment. JET provided the following equipments/testing kits:

Table 4.5-8 List Equipment for Environmental Monitoring

Sl. No.	Name	What to measure
1	Multi-gas Detector	Oxygen (O_2), Combustible gas (Comb), Hydrogen sulfide (H_2S), Carbon monoxide (CO)
2	Portable Gas Detector	Methane ($CH_{4)}$
3	pH Meter	pH
4	Conductivity Meter	Conductivity
5	Field kit to measure NH_4-N	NH_4-N
6	Filed kit to measure COD	COD

An environmental laboratory has been set up at Matuail Landfill and LMU is gradually developing the laboratory. using the simplified water quality testing instruments and landfill gas measurement devices provided under this Project, environmental monitoring of landfill gas, leachate and surface water has been conducted regularly in the landfill site.

i) Measurement of Landfill Gas

In the 4th JFY, the C/P measured landfill gas five times using the simple gas measuring instrument. Just

after waste filling, density of CH_4 and H_2S is very high and the gas has been captured and reused as resource of the electricity as counter measure for global warming but the density is very low one month later. Because there is no soil cover installed daily, it is thought that CH_4 is discharged to the atmosphere. However, landfill gas recovery will be possible in future because density of the gas rises after installing final soil cover. Regular gas measurement and data accumulation are necessary to examine possibility of gas recovery.

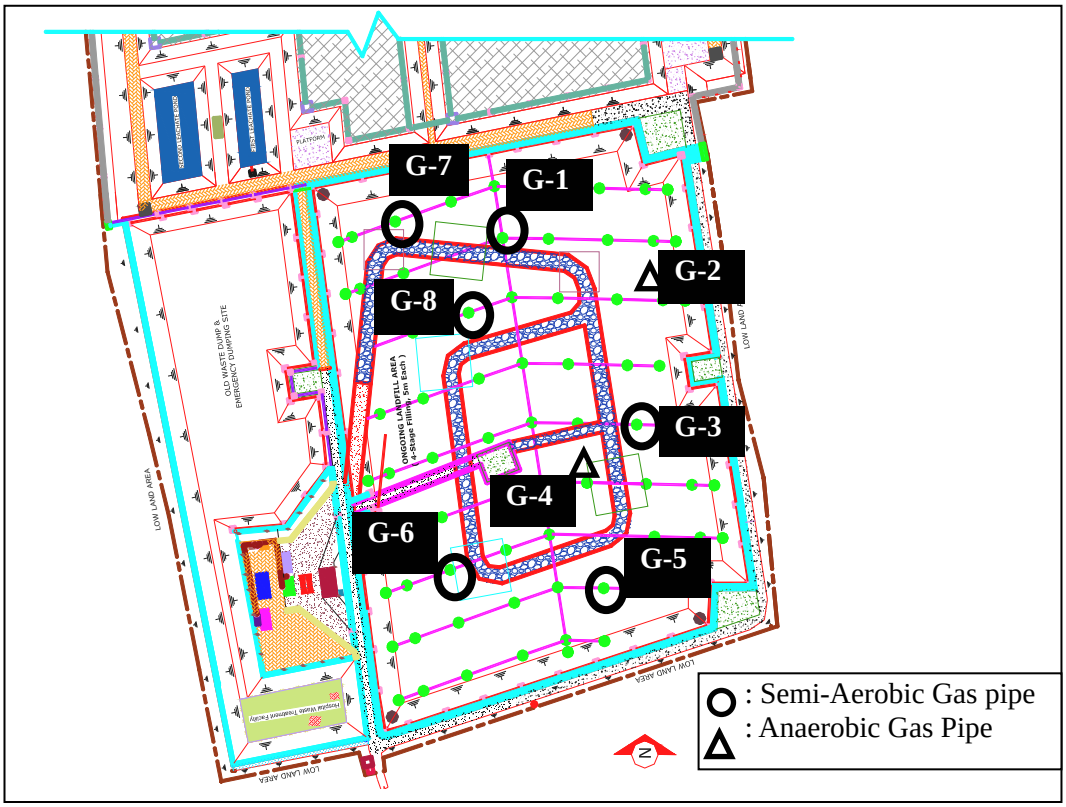


Figure 4.5-12 Location of Sampling

Table 4.5-9 Results of Gas Measurement

Date	Weather	No.	Type of Gas ipe	Height of filled waste	Age of te (Month)	CH_4 (%)	O_2 (%)	Comb (% LEL)	CO (ppm)	H_2S (ppm)
17.12.2009	Sunny	G-1	Type-A	3.3m	16.5	2.3	19.0	88.0	2.0	0.0
		G-2	Type-B	8.5m	Just now	Pipe is buried under waste				
		G-3	Type-A	5.0m	7.5	7.6	15.1	---	15.0	0.0
		G-4	Type-B	6.0m	7.5	2.4	21.0	82.0	0.0	0.0
		G-5	Type-A	6.5m	7.5	0.0	20.2	36.0	1.0	0.0
		G-6	Type-A	6.5m	Just now	10.0	15.3	---	16.0	0.0
		G-7	Type-A	3.3m	16.5	6.9	16.1	---	17.0	0.0
		G-8	Type-A	4.3m	16.5	0.0	20.3	10.0	0.0	0.0
12.10.2009	Sunny	G-1	Type-A	3.3m	14.5	0.0	19.2	27.0	3.0	0.0
		G-2	Type-B	7.0m	Just now	Pipe is buried under waste				
		G-3	Type-A	5.0m	5.5	10.0	12.0		15.0	0.0
		G-4	Type-B	6.0m	5.5	15.0	9.7	85.0	9.0	0.0
		G-5	Type-A	6.5m	5.5	24.0	17.4		3.0	0.0
		G-7	Type-A	3.3m	14.5	27.0	4.5	25.0	6.0	0.0
		G-8	Type-A	4.3m	14.5	0.0	18.9	69.0	2.0	0.0
01.09.2009	Sunny	G-1	Type-A	3.3m	13.5	0.0	19.1	19.0	1.0	0.0
		G-2	Type-B	7.0m	Just now	Pipe is buried under waste				
		G-3	Type-A	5.0m	4.5	7.1	13.7		21.0	0.0
		G-4	Type-B	6.0m	4.5	17.0	7.5	70.0	7.0	0.0
		G-5	Type-A	6.5m	4.5	5.7	14.5		26.0	0.0
		G-7	Type-A	3.3m	13.5	24.0	8.5	65.0	5.0	1.2
		G-8	Type-A	4.3m	13.5	6.7	16.0		24.0	1.2
14.07.2009	Sunny	G-1	Type-A	3.3m	12	0.0	20.4	10.0	1.0	0.0
		G-2	Type-B	7.0m	Just now	0.0	20.2	12.0	1.0	0.0
		G-3	Type-A	5.0m	3	5.1	16.9		34.0	0.0
		G-4	Type-B	6.0m	3	12.0	10.2	101.0	14.0	0.0
		G-5	Type-A	6.5m	3	5.7	15.5		29.0	0.0
		G-7	Type-A	3.3m	12	10.0	11.5	109.0	13.0	0.0
		G-8	Type-A	4.3m	12	4.2	17.2		8.0	
11.01.2009	Sunny	G-1	Type-A	4.5m	18	18.6	21.0	9.0	2.0	1.1
		G-2	Type-B	3.0m	12	0.0	21.0	0.0	2.0	0.0
		G-3	Type-A	4.5m	9	1.4	18.7	98.0	7.0	0.0
		G-4	Type-B	5.0m	9	3.5	17.2	0.0	30.0	0.0
		G-5	Type-A	5.0m	8	4.7	16.6	0.0	37.0	0.0
01.09.2008	Sunny	G-1	Type-A	4.5m	14	9.1	15.4	0.0	47.0	1.2
		G-2	Type-B	3.0m	8	0.0	21.0	0.0	0.0	0.0
		G-3	Type-A	4.5m	5	2.8	19.4	82.0	2.0	2.0
		G-4	Type-B	5.0m	5	2.1	19.9	53.0	0.0	0.0
		G-5	Type-A	5.0m	4	25.0	9.0	55.0	13.0	3.0
08.06.08	Cloudy	G-1	Type-A	4.5m	10	5.6	15.5	0.0	61.0	37.0
		G-2	Type-B	3.0m	4	0.0	21.0	4.0	0.0	0.0
		G-3	Type-A	4.5m	1	0.3	18.5	83.0	0.0	0.0
		G-4	Type-B	5.0m	1	10.0	15.5	0.0	53.0	0.0
		G-5	Type-A	4.5m	Just now	27.0	5.5	51.0	23.0	79.5
30.05.08	Cloudy	G-1	Type-A	4.5m	10	4.4	16.6	0.0	65.0	2.9
		G-2	Type-B	3.0m	4	0.5	21.0	14.0	1.0	0.0
		G-3	Type-A	4.5m	1	0.3	21.0	5.0	0.0	0.0
		G-4	Type-B	5.0m	1	6.9	16.6	0.0	87.0	1.4
		G-5	Type-A	4.5m	Just now	27.0	4.8	56.0	31.0	70.0

Comb.: Main ingredient of the combinations gas is nitrogen
Type-A: This type of pipe is gas ventilation pipe that is connected to a leachate collection pipe.
Type-B: This type of pipe is the pipe that only ventilates landfill gas from inside the landfill, and is not connected to a leachate collection pipe.

ii) Leachate and Surface Water

In the 4th JFY, using simple water quality measuring instruments, LMU conducted analysis of leachate and surface water four times. Table 4.5-10 shows results of leachate and water quality analysis. As density of COD in the leachate becoming smaller, it can be assumed that an effect of Semi-Aerobic System began to appear. Leachate treatment facility is applied three types of techniques. First,

aeration is a measure to bring air into leachate to decompose the organic substances by aerobic microbe. Trickling filter is a measure to decompose the organic substances by aerobic microbe that live around stones on the bottom. Reed bed treatment is a measure to decompose the organic substances by their own cleanup ability.

Table 4.5-10 Results of Leachate and Surface Water Monitoring at Matuail Landfill

Date & Time	Sampling Point	Weather	Water Temperature (˚C)	pH	EC (microseimens/cm)	COD (mg/l)	NH4 (mg/l)
26.02.08 15.30	L-1	Sunny	29	8.1	14.5	4000	80
	L-2		34	8.2	17.6	4500	90
	S-1		28.5	9.2	0.76	90	1.8
	S-2		28	9.1	0.58	80	1.82
28.03.08 15.31	L-1	Sunny	36	7.7	17.7	7000	80
	L-2		37	6.9	20	6000	92
	S-1		31	6.7	0.63	80	0.8
22.07.08 11.00	L-1	Cloudy	35.5	7.8	17.2	7500	40
	L-2		37	7.9	15.8	7000	80
	S-1		28	7.6	0.39	30	0.4
	S-2		28	7.5	0.45	25	0.6
01.09.08 11.01	L-1	Sunny	34	7.9	18.7	3500	70
	L-2		35	7.9	17.8	5000	80
	S-1		30	7.6	0.33	10	0.3
	S-2		30	7.2	0.46	8	0.2
23.10.08 12.30	L-1	Sunny	30	8.1	5.6	800	60
	L-2		33	8	24	1000	80
	S-1		30	8.5	0.52	6	0.4
	S-2		29	7.3	0.82	7	0.4
11.01.09 12.30	L-3	Sunny & Cold	28	6.7	18.9	500	10
	L-2		30	6.5	17.6	700	10
	S-1		25	7	0.5	6	0.2
05.08.09 11.45	L-3	Cloudy	30	8.2	11.50	400	40
	L-2		36	8.1	29	300	80
	S-1		28	7.6	0.45	100	4
	S-2		28	7.3	0.51	80	3
14.10.09 11.15	L-1	Sunny	33	8.2	14.7	700	100
	L-2		37	8.1	34	800	90
	S-1		32	8.3	0.45	5	7.75
	S-2		28	7.6	0.65	7	7
29.12.09 11.45	L-1	Sunny & Cold	20	8.5	8.4	Reagent finished. New kit required	40
	L-2		30	8.3	30		35
	L-3		19	8.6	9.2		15
	S-1		20.5	8.5	1.95		1.0
	S-2		18.5	7.9	1.73		1.5

L1: In the inspection pit on the north-west corner of dumping area, L 2: In the main outlet of Leachate;
S1: Water body on the eastern side, S2: Water body on the western side, L3: Leachate pond

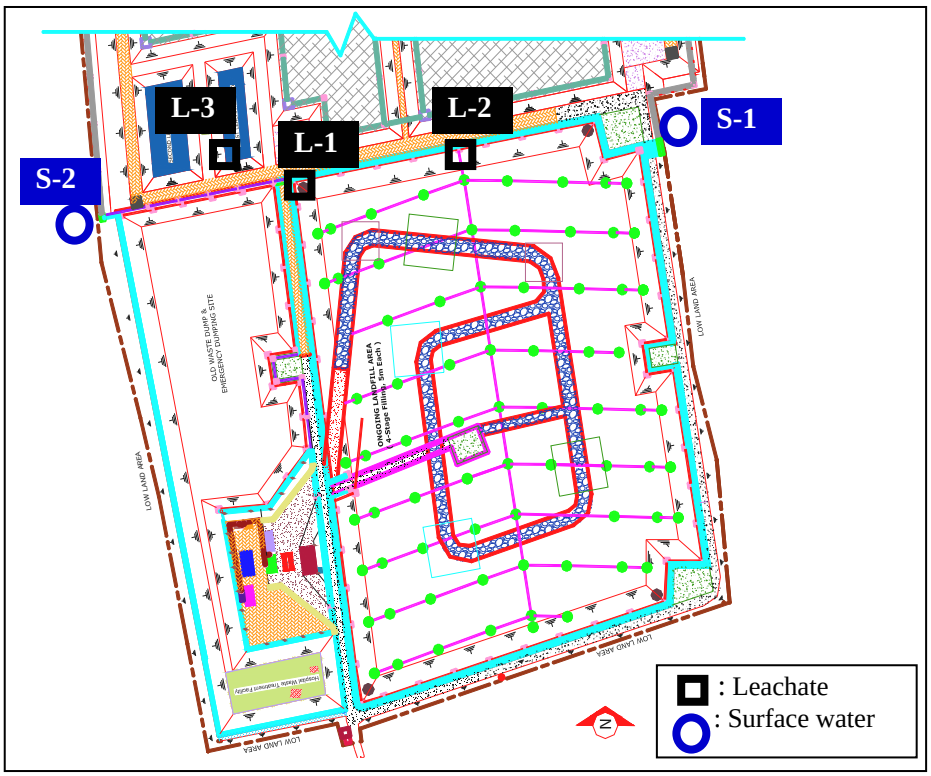


Figure 4.5-13 Location of Sampling

(c) Environmental Monitoring as per EMP:

It was planned that LMU should engage an expert laboratory to carry out environmental monitoring according to the EMP in EIA report. LMU has secured the budget for environmental monitoring by expert laboratory, however still has not engaged any laboratory because BUTE could not submit their quotations as schedule and Mayor did not approve it. Beside, the laboratory in Dhaka University (DU) student of Soil Science Department has been engaged to investigate the leachate, surface and ground water quality at Matuail as a part of MSc dissertation work.

(d) Results of Soil, Leachate, Surface and Ground Water Quality Analysis by Dhaka University Student

A Dhaka University student of Soil Science Department has been analyzing the soil, leachate, surface and ground water quality as dissertation work of his master degree. Results of his analyses are shown that aerobic treatment can improve the leachte quality and there is no effect caused by the leachate as shown in below.

Table 4.5-11 Results of Soil Quality Analysis

Parameters	Sample ID-1	Sample ID-2	Sample ID-3	Sample ID-4
Pb	13.5	20	41.5	6.5
Cr	29.076	33.426	25.176	30.626
Ni	32.335	39.535	32.085	36.785
Cd	-	-	0.048	-
Cu	62.317	61.767	67.767	56.817
Zn	117	154.435	299.935	203.435

Table 4.5-12 Results of Leachate Quality Analysis

Parameters	Untreated Sample	Treated Sample	Methodology Used
Ph	6.93	5.20	pH meter
EC (us/cm)	10900	1210	EC meter
TDS (mg/I)	734	224	TDS meter
Temperature(*C)	28.9	29.2	
DO(mg/I)	0.9	1.4	DO meter
COD(mg/I)	1630.944	1436.784	Titrimetric analysis
NH_3-N(mg/I)	1252.79	15.477	Kjeldal Microdistillation Process
NO_3-N(mg/I)	2198.57	76.82	Kjeldal Microdistillation Process
CI^-(mg/I)	976.25	266.35	Mohr Volumetric Method
CO_3^{2-}(mg/I)	720	72	Titrimetric analysis
HCO_3 -(mg/I)	27962.4	3660	Titrimetric analysis
Ca^{2+}(mg/I)	14	3	Titrimetric analysis
Ca^{2+} Mg^{2+}(mg/I)	17	9	Titrimetric analysis
Pb(mg/I)	Nil	Nil	AAS Method
Cr(mg/I)	0.744	0.036	AAS Method
Ni(mg/I)	1.048	0.097	AAS Method
Zn(mg/I)	0.378	0.0448	AAS Method
Cd(mg/I)	0.0056	0.0006	AAS Method
Cu(mg/I)	0.147	0.0256	AAS Method

Table 4.5-13 Results of Ground water and Surface Water Quality Analysis

Parameters	Sample ID-1 (SW)	Sample ID-2 (GW)	Sample ID-3 (GW)	Sample ID-4 (GW)	Sample ID-5 (SW)
Location	N 23°43.223' E 90° 27.181'	N 23°43.223' E 90° 27.181'	N 23°43.017' E 90° 26.996'	N 23°42.961' E 90° 27.013'	N 23°42.962' E 90° 27.012'
Type	Pond Water	Hand-tube well	Deep-tube-well	Deep-tube-well	Pond Water
pH	6.5	6.8	7.4	7.0	6.6
EC	370	937	271	211	799
Temperature	28.7	27.7	28.1	28.9	29
TDS	196	502	143	111	427
DO	3.2	5.3	4.4	4.4	2.3
COD	50.48	3.88	7.76	3.88	38.83
NH_3-N	15.4	15.4	74.2	21	23.8
NO_3-N	8.4	5.6	8.4	21	5.6

(e) Amin Bazar Landfill

DCC could not carry out EIA due to the BELA issue.

(2) Good Practices, Problems and Feedback Identified

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.5-14.

Table 4.5-14 Good Practices, Problems and Feedback Identified

Good Practices for Successful Implementation	【Matuail Landfill Site】 ➢ Landfill staff have used simple measuring instruments provided by the Project and got possible to perform environmental monitoring. ➢ Landfill staff has understood that environmental monitoring is important through implementation of the monitoring ➢ Site manager manages a monitoring result.

	➢ LMU obtained a budget of the environmental monitoring in accordance with EMP. ➢ Site manager performed an ordering procedure of the environmental monitoring in accordance with EMP.
Problems, Obstacles and Limitations Hindering Successful Implementation	【Matuail Landfill Site】 ➢ Continuous enforcement of the environmental monitoring that obeyes EMP. ➢ Securing the budget of environmental monitoring. ➢ Understanding of environmental monitoring by the decision maker is necessary.
Measures Taken to Solve the Problems	【Matuail Landfill Site】 ➢ Environmental monitoring workshop for decision makers. ➢ Publications of monitoring results at the website may appeal to the outside and decision makers.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ It is needed to secure the budget of environmental monitoring to implement it along with EMP. 2) Necessity for Reviewing Methodology ➢ Nothing in particular. 3) Necessity for Reviewing Expected Results ➢ DCC still can not implement EIA because of the matter of BELA. ➢ It is uneasy to report EIA to DOE because of not good relationships between DCC and DOE. DCC still doesn't submit EIA for Matuail extension to DOE. 4) Required Supports from Outside the Group ➢ Decision makers' understanding about necessity of securing budget for environmental monitoring.

4.5.4 Activity 4.4: To evaluate landfill operation improvement

(1) Result of Activity

1) Expected Result

With given improved scenario at the landfill site, it was expected overall environment has been improved compare to the previous one. To assess improvement of environment and development of the capacity of the site staff, it was expected to form a committee comprising representatives from DOE, MoLGRD&C, DCC and other relevant organizations to assess the environmental improvement caused by sanitary landfill construction and operation, and capacity development of the site staff

2) Actual Result

Although it was initially expected to conduct the evaluation by a committee formed by representatives from DOE, MoLGRD&C, DCC high official and other relevant organizations, it has not been possible to form the committee due to some limitations of relationship between DCC and DOE. Instead, it has been decided to conduct internal assessment of the improvement by the LMU and JET. Following surveys has been carried to evaluate the landfill operation improvement.

- Environmental improvement survey at Matuail Landfill with interview survey with neighboring people
- Interview survey to assess the management improvement with staff at Matuail Landfill

(a) Environmental Improvement Survey at Matuail Landfill

i) Purpose of the Survey

Matuail was the only official landfill site operated by DCC. Municipal solid wastes collected from Zone 1 to 5 of DCC are transported to the Matuail Landfill Site. The estimated amount of solid waste disposed at this site has been approximately 1,200-1,500 tons/day. The landfill site is enclosed by embankments and is free from flooding. Before the Project generation of leachate, gas, odor, dust and fire hazard, etc., have been the common environmental problems in the existing site. Solid wastes had been dumped in an unplanned way everywhere inside and sometimes outside of the peripheral

embankment. The dumped wastes had been piled up vertically in an unstable condition and sometimes slides blocking the drainage system. Due to poor drainage system, in the rainy season, the leachate flows over the roads. The stagnation of leachate on the road severely disrupts the vehicle movement and at sometimes, the disposal operation virtually halted.

Transformation of this open dump into the controlled sanitary landfill site has improved the overall environment in and around Matuail Landfill Site. Major sanitary landfill components introduced in Matuail have been the leachate collection and gas venting system, surface water drainage improvement, systematic operation of waste by daily covering, slope reformation, construction of working roads, weighbridge operation, and vehicle washing facilities. A semi-aerobic landfill system has been adopted to reduce the polluting load on the environment and speed up the stabilization of the disposed wastes. A perforated pipe network for leachate collection and gas venting arrangement has been installed for proper collection of the leachate and provision of air supply system. Periodical monitoring of the environmental parameters of the ground and surface water, leachate quality and landfill gas has been introduced as part of the operational measure of the sanitary landfill.

To assess the improvement of surrounding environment this survey has been designed and conducted where representatives from five different types of stakeholders have been asked to give their opinion. Those five stakeholders are surrounding residents, surrounding fisheries, surrounding farmers, waste pickers, waste carrying vehicle drivers and all landfill staffs.

ii) Contents of Survey

Survey target and number of samples

- Landfill staffs (all staffs）
- Vehicle drivers (30persons)
- Surrounding resident (100 persons, Living for minimum five years）
- Surrounding Farmer (20 persons, Working for minimum five years）
- Surrounding Fisheries (20 persons, Working for minimum five years）
- Waste pickers (50persons, Working for minimum five years）

Frequency for the survey

- 2 times (Dry and Rainy season)

Survey implementation period

- Rainy season 2009: June 2009 – August 2009
- Dry season 2009: December 2009 – February 2010
- Rainy season 2010: June 2010 – August 2010
- Dry season 2010: December 2009 – January 2010

Surveyor

- Representative DCC
- JET Local staff

iii) Contents of Questionnaire

To assess the environmental improvement each of the groups was asked to give their opinion about different items that affect may affect the living environment. Different groups were asked question as per the following table. Each of the participants answered each question by mentioning the improvement to be Very Good (VG), Good (G), Normal (N), Bad (B) or Very Bad (VB). In case of commenting the improvement to be Bad (B) or Very Bad (VB) each of the participants was asked to mention the reason.

Table 4.5-15 Contents of Questionnaire for Environmental Improvement Survey

Sl. No.	Item		Landfill staffs	Vehicle Drivers	Surrounding			Waste pickers
					Resident	Farmer	Fisheries	
Environmental Improvement								
1	Offensive odor		○	○	○	○	○	○
2	Scattering of waste		○	○	○	○	○	○
3	Vectors		○	○	○	○	○	○
4	Fire		○	○	○	○	○	○
5	Surface water pollution		○	○	○	○	○	○
6	Noise		○	○	○	○	○	○
7	Vibration		○	○	○	○	○	○
8	Landscape		○	○	○	○	○	○
Landfill Operation & Management								
1	Waste filling	Day	○	○	—	—	—	—
		Night	○	○	—	—	—	—
2.	Waste slope arrangement		○	—	—	—	—	—
3.	Road		○	○	—	—	—	—
4.	Waste dumping Platform		○	○	—	—	—	—
5.	Vehicle control		○	○	—	—	—	—
6.	Leachate collection pipes		○	—	—	—	—	—
7.	Leachate treatment		○	—	—	—	—	—
8.	Gas vent pipes		○	—	—	—	—	—
9.	Surface water drainage		○	—	—	—	—	—
10.	Car washing facility		○	—	—	—	—	—
11.	Weighbridge		○	○	—	—	—	—
12.	Lighting		○	○	—	—	—	—
13	Site cleaning		○	○	—	—	—	—
Personal health and safety								
1	Safety condition		○	○	○	○	○	○
2	Health hazard		○	○	○	○	○	○
3	Accident risk		○	○	○	○	○	○
4	Washing facility		○	○	○	○	○	○
5	Sanitation		○	○	○	○	○	○
D. Special requirement/ comments to improve landfill operation								

iv) Results of Survey on Environmental Improvement

- All of the participants, i.e., 267, 255, 263 & 265 participants were asked to give their opinions regarding the environmental improvement issues in the four consecutive surveys conducted during wet season in 2009, dry season in 2009, wet season in 2010 and dry season in 2010 respectively. Following figure shows the results of the survey for each time.
- Overall except two issues of vectors control and odor control, there has been observed significant improvement all of the environmental issues. Noise control has significantly been improved. Compare to 2009, in 2010 majority participants commented the improvement to be good or very good. Vector control is not so good. In 2010 more people thought it to be very bad compared to 2009.
- Although many initiatives have been taken by the Project Team to continue regular soil covering over the wastes, it has been unsuccessful due to some limitations like, shortage of heavy equipments, lack of fuel, 24 hour landfill operation etc. However it is expected that introduction of regular daily soil cover will resolved this problem significantly. In 2009 and wet 2010 majority participants commented surface water pollution control to be normal, whereas in dry 2010 majority (80%) said it to be very good. This means Matuail sanitary landfill has successfully controlled the surface water pollution and thus improved the quality of surrounding water bodies.
- Impression about offensive odor control has resulted in 2010 to be quite bad. One of the main

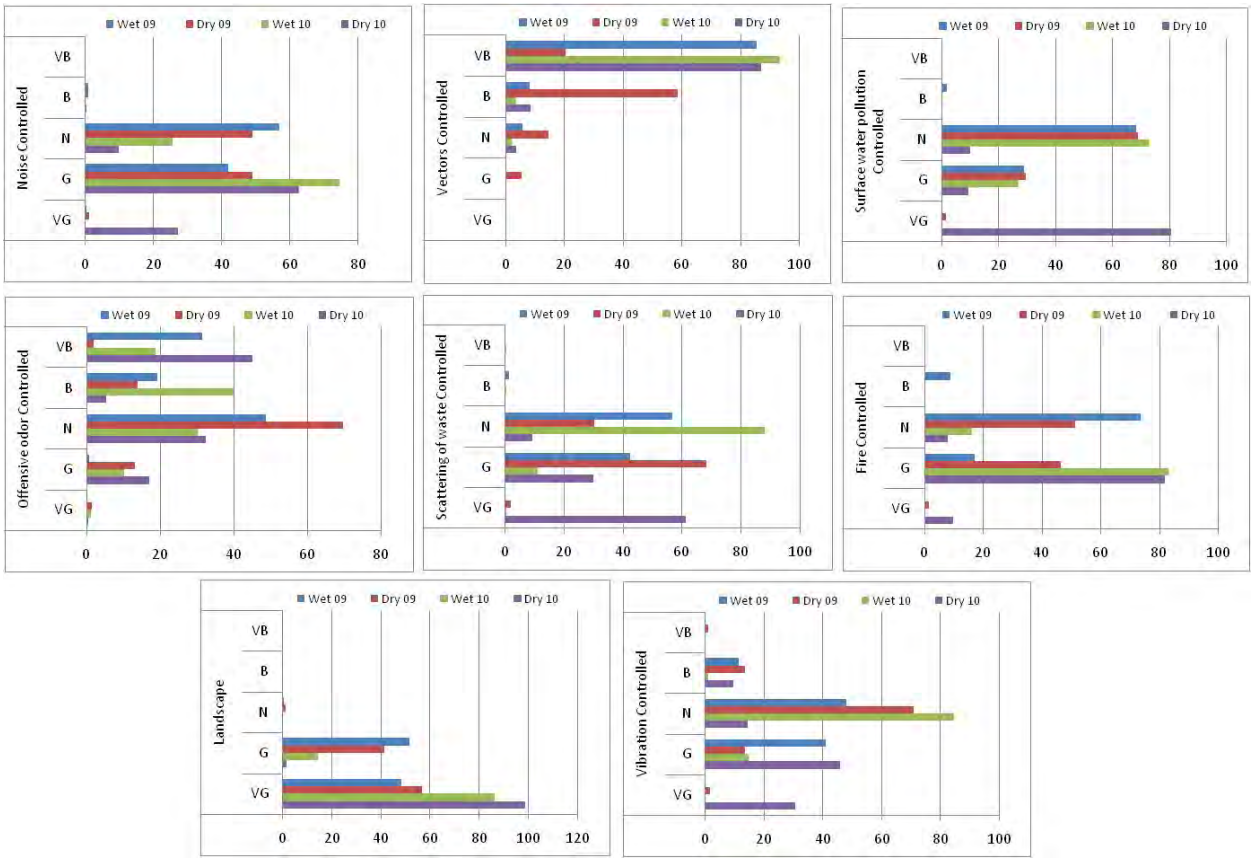
reasons for the odor problem was found to be lack of soil cover. In the dry season of 2010, about 61% or 30% people assumed the improvement regarding the waste scattering control is very good or good respectively which was 0% and 42% in the Wet season of 2009 respectively. This means waste disposal management has improved quite significantly.

- Fire control improvement has also been observed significantly positive in recent survey. In practical LMU has become more aware of fire hazard gradually and now-a-days fire detection and extinguishing has been improved.

98% of the participants commented the landscape of Matuail Sanitary Landfill Site to be very good in the dry season 2010 survey, which were 48% very good and 51% good in the wet season' 2009 survey. Regarding vibration control mixed opinions have been observed in all four surveys and in 2010 survey, majority people commented the improvement to be good (46%) and very good (30%).

Table 4.5-16 Survey results of the environmental issues

Sl. No.	Survey topics	Wet season 2009					Dry season 2009					Wet season 2010					Dry season 2010				
		VG	G	N	B	VB	VG	G	N	B	VB	VG	G	N	B	VB	VG	G	N	B	VB
1	Noise Controlled	0	42	57	1	0	1	49	49	1	0	0	75	25	0	0	27	63	10	0	0
2	Vectors Controlled	0	0	6	8	85	0	6	15	59	21	0	0	2	4	94	0	0	4	9	87
3	Surface water pollution controlled	0	29	68	2	0	1	30	69	0	0	0	27	73	0	0	80	9	10	0	0
4	Offensive odor Controlled	0	1	49	19	31	1	13	70	14	2	1	10	30	40	19	0	17	32	5	45
5	Scattering of waste Controlled	0	42	56	1	0	2	68	30	0	0	0	11	88	0	0	61	30	9	0	0
6	Fire Controlled	0	17	74	9	0	1	46	51	0	0	0	83	16	0	0	10	82	8	0	0
7	Landscape	48	51	0	0	0	57	41	1	0	0	86	14	0	0	0	98	2	0	0	0
8	Vibration Controlled	0	41	48	11	0	2	13	71	13	1	0	15	85	1	0	30	46	14	10	0



* Participating stakeholders: Landfill staffs, vehicle drivers, residents, farmers, fishermen, waste pickers

* VG; Very Good, G; Good, N; Not so bad, B; Bad, VB; Very Bad

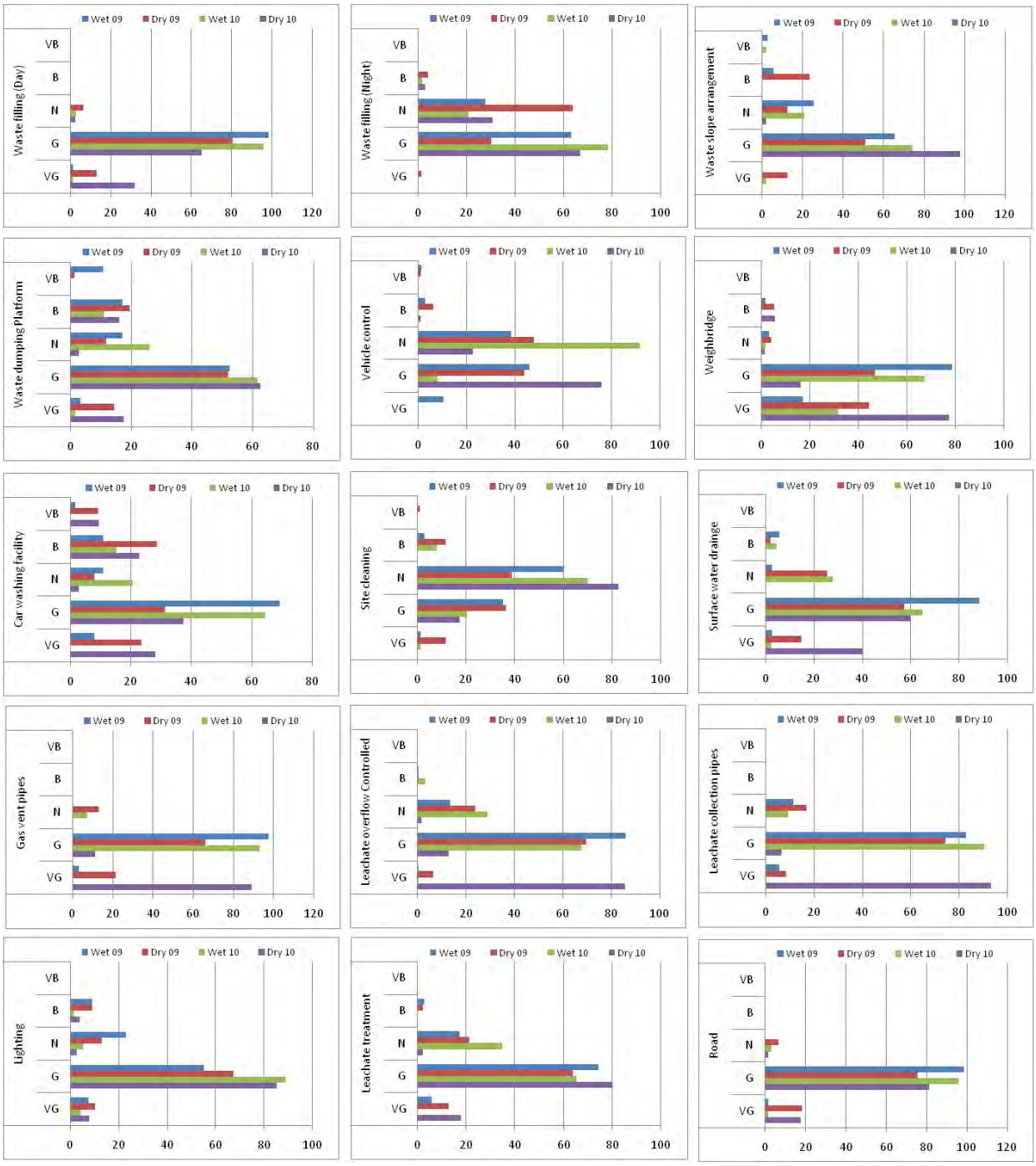
Figure 4.5-14 Survey Results of the Environmental Issues

v) Survey results on related to the landfill operation and management:

- Regarding issues related to the landfill operation and management, landfill staffs and vehicle drivers were asked to give their comments. Waste filling operation in the day time has mostly been commented as to be good or very good in all four surveys
- The night time mostly commented as to be normal or good. Comparing the wet and dry season operation in 2009 with that of 2010, gradual improvement is evident in each case, which depicts the improved capacity of LMU for landfill operation. Regarding slope arrangement gradual improvement is also evident over the survey and in the most recent survey, in the season of dry 2010 98% participants mentioned it to be good.
- Waste dumping platform has always been the most important concern for the dumping operation especially during the wet season. It has been observed that 11%-17% participants, mainly the waste carrying vehicle drivers, commented the platforms to be bad. They mentioned insufficient compaction of platform, soft base, using brick etc to be the main reasons for bad commenting. However increased number of participants has mentioned platforms to be good, comparing between 2009 and 2010, which means better management and maintenance of platforms gradually.
- Vehicle control has improved a lot in 2010. Actually through restricting/ limiting movement of vehicle within the site has resulted improvement of vehicle control in the site.
- For weighbridge operation, majority portion of the participants commented to be good or very good in all the surveys. However, there had been some problems for drivers' cooperation earlier, which was being tried to resolve gradually by the authority.
- Regarding car washing facility, the participants gave mixed opinions. However, except the dry season of 2009 survey, majority of the participants mentioned the car washing facility to be good or very good in other surveys. However drivers have been demanding to operate the car washing facility in the night shift, which was not possible for LMU to arrange.
- Majority of the participants think the site cleaning condition to remain normal, while significant numbers mentioned it to be good. Surface water drainage system has been commented to good or very good by the majority of the participants. Especially in dry 2010 survey significant 40% participants mentioned the system to be very good.
- Regular maintenance of the gas vent pipes is an important for the sanitary landfill operation. Overall impression of the participants regarding this issue is good or very good in all the surveys. LMU is carefully monitoring and maintaining the gas vent pipe networks in the site.
- After introduction Matuail Sanitary Landfill Site leachate overflow is totally controlled and hence surrounding water bodies has improved quite a lot. In the survey results, same picture is evident and in the dry season of 2010 survey, 86% participants has commented the control to be very good.
- Maintenance leachate collection pipe network is vital for semi-aerobic landfill system. LMU sincerely taking care of this network and from survey results it is also evident as majority participants has commented it to be either good or very good. In dry 2010 survey 93% participants commented 'very good' about leachate collection pipe network.
- About lighting facility available in the landfill site, majority commented good, however only few less than 5% commented it to be bad. Due to power failure during night time landfill operation faces difficulty. Majority of the participants mentioned the development of internal road networks in the site to access dumping platforms to good and some portion said it to be very good.
- Treatment of collected leachate is another important concern for sanitary landfill operation and LMU is carrying biological treatment of leachate through aeration. But due to electricity limitation, adequate aeration has not been possible to carry out. However majority of the participants has commented leachate treatment facility to be good or very good.
- In all surveys, 64% - 80% participants has commented it to be good. LMU is systematically planning and constructing temporary roads and permanent roads, which has facilitated the sound management of dumping operation. In the dry season of 2010 survey 17% & 81% participants has commented road facility to be very good and good.

Table 4.5-17 Survey Results on Issues Related to Landfill Operation and Management

Sl. No.	Survey topics	Wet season 2009					Dry season 2009					Wet season 2010					Dry season 2010				
		VG	G	N	B	VB	VG	G	N	B	VB	VG	G	N	B	VB	VG	G	N	B	VB
1	Waste filling (Day)	2	98	0	0	0	13	81	6	0	0	1	96	3	0	0	32	65	3	0	0
2	Waste filling (Night)	0	63	28	0	0	1	30	64	4	0	0	78	21	1	0	0	67	31	3	0
3	Waste slope arrangement	0	66	26	6	3	13	51	13	23	0	2	74	21	0	2	0	98	2	0	0
4	Waste dumping Platform	3	52	17	17	11	14	52	12	19	1	1	62	26	11	0	17	63	3	16	0
5	Vehicle control	11	46	38	3	2	0	44	48	6	1	0	8	92	0	0	0	76	23	1	0
6	Weighbridge	17	78	3	2	0	44	47	4	5	0	32	67	1	0	0	77	16	1	5	0
7	Car washing facility	8	69	11	11	2	23	31	8	29	9	0	64	21	15	0	28	37	3	23	9
8	Site cleaning	2	35	60	3	0	12	36	39	12	1	1	21	70	8	0	0	17	83	0	0
9	Surface water drainge	3	89	3	6	0	15	57	26	2	0	2	65	28	5	0	40	60	0	0	0
10	Gas vent pipes	3	97	0	0	0	21	66	13	0	0	0	93	7	0	0	89	11	0	0	0
11	Leachate overflow Controlled	0	86	13	0	0	6	70	24	0	0	0	68	29	3	0	86	13	2	0	0
12	Leachate collection pipes	6	83	11	0	0	9	74	17	0	0	0	91	9	0	0	93	7	0	0	0
13	Lighting	8	55	23	9	0	10	68	13	9	0	4	89	5	1	0	8	85	3	4	0
14	Leachate treatment	6	74	17	3	0	13	64	21	2	0	0	65	35	0	0	18	80	2	0	0
15	Road	2	98	0	0	0	18	75	6	0	0	1	96	3	0	0	17	81	1	0	0



* Participating stakeholders: Landfill staffs, vehicle drivers

* VG; Very Good, G; Good, N; Not so bad, B; Bad, VB; Very Bad

Figure 4.5-15 Survey Results on Issues Related Landfill Operation & Management

vi)Survey results of the health, safety and personal issues:

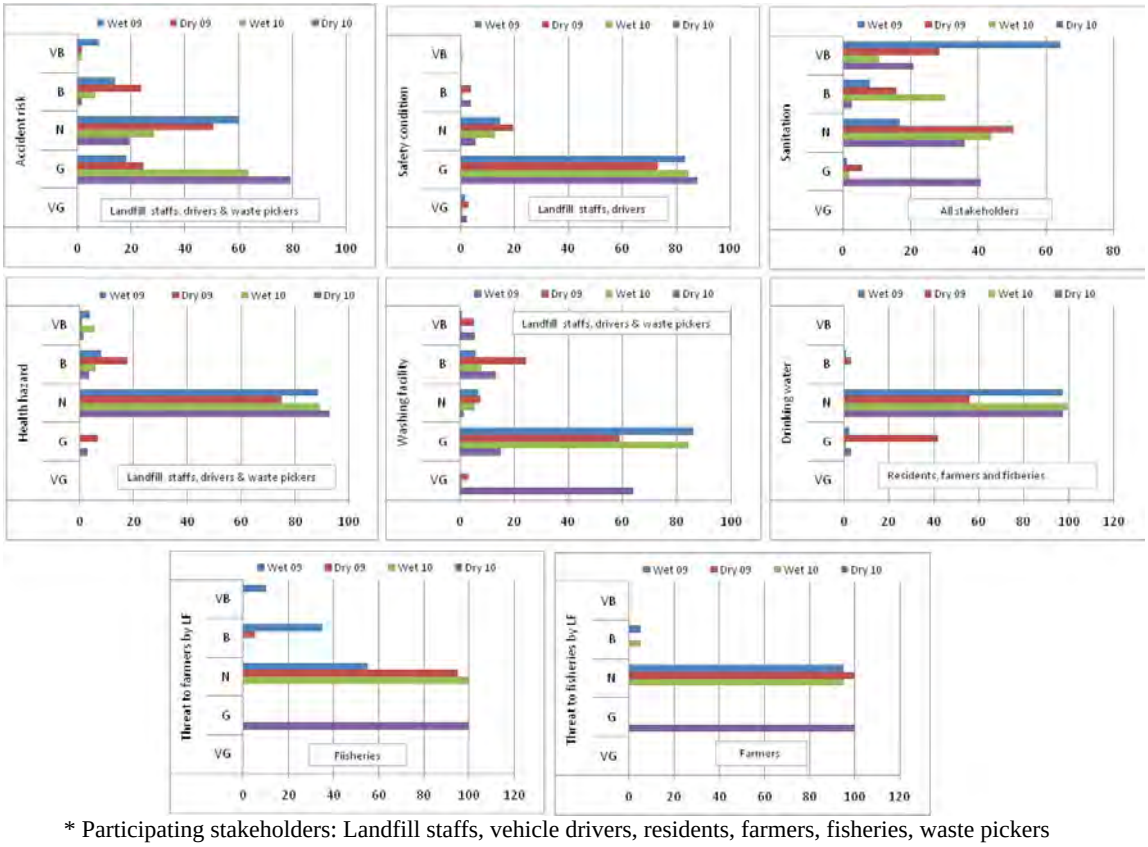
- All of the participants were asked to comment about health hazard due to landfill. Landfill staffs, vehicle drivers and waste pickers were asked to comment about accident risk, washing facility at landfill, and sanitation condition. Landfill staffs and vehicle drivers were asked about safety condition at landfill.
- About drinking water surrounding residents, fishermen and farmers were asked. Improvement regarding accident risk has been observed more in 2010 than 2009. In the dry season of 2010, among the participants, 79% commented the improvement to be good. Majority of the participants commented the safety condition to be improved in each of the surveys. 88% of the participants mentioned the improvement to be good in dry 2010 while in the dry season of 2009 73% said it to

be good.

- Regarding sanitation improvement in the wet season of 2009 64% or 17% of the participants commented it to be very bad or normal, respectively, while in the final survey in the dry season of 2010, 41% or 21% commented it to be good or very bad. However in wet 2010 survey, 44% & 30% mentioned it to be normal and bad respectively.
- Regarding health hazard improvement, 89%, 75%, 89% or 93% of the participants commented normal in four consecutive surveys respectively. Washing facility at landfill site has improved a lot which was also revealed in the surveys and in the dry season of 2010 survey, 64% mentioned it to be very good while in other surveys majority said it to be good. All participants (surrounding residents, fishermen and farmers) from the surrounding areas of landfill site mentioned the quality of drinking water to remain normal in all four surveys. 100% of the farmers mentioned threat to farming due to landfill to be normal and good in two surveys in 2010, while in 2009 surveys commented the threat to be very bad or bad and mostly normal.
- 95% or 100% of the fisheries mentioned threat to fisheries due to landfill to be normal or good in two surveys in 2010, respectively and in 2009 survey, the result was also the same.

Table 4.5-18 Survey results of the health and safety related issues

Sl. No.	Survey topics	Wet season 2009					Dry season 2009					Wet season 2010					Dry season 2010				
		VG	G	N	B	VB	VG	G	N	B	VB	VG	G	N	B	VB	VG	G	N	B	VB
1	Accident risk	0	18	60	14	8	0	24	50	24	2	0	63	28	7	2	0	79	19	2	0
2	Safety condition	2	83	15	0	0	3	73	20	4	0	1	85	13	1	1	2	88	6	4	0
3	Health hazard	0	0	89	8	4	0	7	75	18	1	0	0	89	6	5	0	3	93	3	1
4	Washing facility	0	86	7	6	1	3	59	8	24	6	1	85	6	8	1	64	15	2	14	6
5	Sanitation	0	1	17	8	64	0	6	50	16	28	0	2	44	30	11	0	41	36	2	21
6	Drinking water	0	2	97	1	0	0	41	56	3	0	0	1	99	0	0	0	3	97	0	0
7	Threat to fisheries by LF	0	0	95	5	0	0	0	100	0	0	0	0	95	5	0	0	100	0	0	0
8	Threat to farmers by LF	0	0	55	35	10	0	0	95	5	0	0	0	100	0	0	0	100	0	0	0



* Participating stakeholders: Landfill staffs, vehicle drivers, residents, farmers, fisheries, waste pickers

Figure 4.5-16 Survey result of the health and safety related issues.

During the survey all of the participants were asked to mention the reason for commenting "bad" or "very bad" for each item. All of the reasons were discussed during a workshop held at landfill site and possible countermeasures to be undertaken were decided within the scope of LMU and DCC. Following table shows the reasons of "Bad" and "Very Bad" comments and their countermeasures.

Table 4.5-19 Reasons for "Bad" and "Very Bad" Comments and their Countermeasures

Sl. No.	Reason for "Bad"or "Very Bad" comment	Commented by	Countermeasure adopted
a	**Vectors:**		
1	Too many flies, mosquitoes & other vectors	Landfill Staff, Vehicle drivers, residents, farmers, fishermen, waste pickers	Initiatives have been taken to start soil cover work
2	Medicine is not used properly		
b	**Fire:**		
1	No facility of fire fighting	Landfill Staff	LMU is going to procure one high pressure washing machine, by which fire fighting work can be managed.
c	**Vibration:**		
1	Platform is not good	Landfill Staff and vehicle drivers	More care shall be taken during construction of platform and working road to ensure adequate compaction of the base. More care shall be taken during construction of platform and working road to ensure adequate compaction of the base.
2	Platform is made of brick		
3	Foundation of the platform is not good		
4	Adequate compaction has not been done during construction of platform		
5	Working roads are not good		
6	Vibration on the platform		
7	High elevation of road to the platform		
8	Foundation material of road and platform is not good		
d	**Slope arrangement:**		
1	For unavailability of heavy equipment	Landfill Staff	Instruction has been given to the heavy equipment operators from both the mechanical and LMU to follow slope during spreading wastes. Waste height pole is installed in the periphery to guide the heavy equipment operators. Final soil cover will be applied by the contractors to engage soon.
2	Compaction is not sufficient		
3	Not enough space to make slope		
4	Fuel and availability of heavy equipment is problem		
5	No arrangement for making slope		
6	Not enough space and man power		
e	**Platform:**		
1	Compaction is not sufficient	Landfill Staff	More care should be taken during construction of platform and working road to ensure adequate compaction of the base.
2	Made of brick		
3	Construction management of the platform is not good	Vehicle Driver	More care should be taken during construction of platform and working road to ensure adequate compaction of the base.
4	Vehicle skids on the steel plate		
5	Platform size is very small		
6	Brick platform is not good		
7	Platform is not strong enough		
8	Brick and steel plates are not good for platform		

Sl. No.	Reason for "Bad"or "Very Bad" comment	Commented by	Countermeasure adopted
f	**Vehicle:**		
1	Management is not good	Landfill Staff	Sign board should be used more
			efficiently to guide the vehicle.
2	For administrative weakness		
3	Platform is very small		
4	High elevation of working road	Vehicle Driver	High elevation cannot be avoided
g	**Leachate treatment:**		
1	For not staring full scale operation	Landfill Staff	Main electric cable has been installed and connection will be given soon. Then full scale operation will start.
h	**Drainage:**		
1	Drainage system is not cleaned properly.	Landfill Staff	Cleaning of drainage system is ongoing.
i	**Car washing:**		
1	More manpower required.	Landfill staff and vehicle Driver	New washing facility is under way of construction. Using new facility, whole body of truck can be washed in 2 minutes. Besides, two washing machines will be given by Mechanical Division-1.Initiatives should be taken to ensure 24 hours availability of water.
2	Water is not available all the time.		
3	Washing machines are not good.		
4	Cleaners are not sincere to their work.		
5	Water pressure is not sufficient.		
j	**Health hazard:**		
1	No treatment facility (weekly or monthly)	Landfill Staff	Safety and sanitation committee will be made more effective. Regular supply of medicine from the Health Department will be ensured officially.
2	Lack of medicine and safety gears (mask)		
3	Medicine required	Vehicle Driver	First aid box is available at site office. Regular supply of medicine from the Health Department will be ensured officially.
4	Fever, vomit, stomach problem and other diseases	Resident	Beyond scope of LMU.
5	Diarrhea, stomach problem and vomiting	Fisheries	Beyond scope of LMU
6	Gastric, fever, Stomach problem	Waste Picker	Waste Pickers should be made aware of health hazard
7	Possibility of hand and leg Cut		
8	Ear Problem & allergy		
k	**Electricity:**		
1	Electricity problem	Landfill Staff	Main electric cable connection has been done; Hence less electricity failure will occur. Fuel arrangement for generator is almost completed. Generator will support during electricity failure at night.
2	Insufficient lighting		
l	**Cleaning:**		
1	Whole site area are not cleaned	Landfill Staff	Weekly cleaning schedule is followed properly.
2	One control building area is cleaned		
m	**Accident:**		
1	High speed of the vehicle	Landfill Staff	Speed limit signboard can be introduced. Speed breaker will be installed.
2	Working in front of vehicle at platform		

Sl. No.	Reason for "Bad"or "Very Bad" comment	Commented by	Countermeasure adopted
3	Electricity phase out during night time		Scavengers will be made aware of accident risk. Construction of footpath
4	Public vehicles at the entrance of landfill site creates problem	Vehicle Driver	Speed breaker will be introduced. Speed limit signboard can be used.
5	Driving back from the platform is risky		
6	Vehicle control is not good	Waste Picker	Speed breaker will be introduced to control the vehicle speed. Awareness building will be done
7	Afraid of accident by heavy equipment		
n	**Washing facility:**		
1	Water is not available all the time	Landfill Staff, waste pickers, vehicle drivers	Contractor will be engaged to do the required measures to ensure required washing facility.
2	Frequent stealing of water tap		
3	Soap and tissue is not available		
4	Washing facility is not sufficient		
5	All time no water, especially during night time		
p	**Sanitation:**		
1	Water taps, lights and doors are not good in toilets	Landfill Staff and vehicle drivers	Contractor will be engaged to do the required measures to ensure washing & toilet facility.
2	No wash basin in the toilet		
3	Toilet facility is insufficient and not good		
4	Water is not available 24 hour		
5	Water taps are stolen frequently		
6	Toilets are not cleaned		
q	**Noise:**		
1	Varieties noise	Vehicle Driver	New equipments are in use, lesser noise.
r	**Waste filling night:**		
1	Not enough equipment or manpower	Vehicle Driver	Request has been made to mechanical department to ensure heavy equipments during night time as required.
2	Tyre dozers do not work properly		
s	**Weighbridge:**		
1	Automatic system is required	Vehicle Driver	Operators are working properly. More vehicles are weighing at weighbridge through proper initiatives by the authority.
2	Weighbridge operators do not work properly		
t	**Lighting:**		
1	Lighting is insufficient	Vehicle Driver	Sufficient light will be done under the contract of electrical maintenance
u	**Safety:**		
1	Safety condition is not good	Vehicle Driver	Ansars (security guard) are instructed for ensuring site safety
v	**Odor:**		
1	No Soil Cover	Resident, farmers and fisheries	Initiatives have been taken to start soil cover work.
2	No Medicine is used to reduce odor		
3	Wind direction intensify odor		
4	Rain and wind direction and intensify the problem		
w	**Threat to agriculture by**		

Sl. No.	Reason for "Bad"or "Very Bad" comment	Commented by	Countermeasure adopted
	landfill:		
1	Draining out of leachate through the peripheral pipe	Farmer	Proper measures should be taken by LMU
X	**Drinking water:**		
1	Sometime bad smell	Fisheries, farmers	Beyond scope of LMU

(b) Interview Survey to Assess the Improvement of Matuail Landfill

i) Purpose of the Survey

After inauguration of the Matuail Sanitary Landfill Site, three years have already passed. LMU has gradually been adopting sanitary practices in the landfill operation. To support the landfill staffs to understand their duties properly, regular weekly meeting, monthly coordination meeting, workshops, field demonstration have been organized time to time by LMU with the support from JET. A working manual has been prepared and a number of signboards have been installed in different places of the site to facilitate understanding of sanitary work method. Now landfill staffs are much aware of landfill operation. To assess the understanding of the responsibilities by individual staffs of the landfill site this questionnaire survey has been conducted. During the survey, every landfill staffs were interviewed with particular queries to assess their perception on landfill operation. Besides, they were also asked to share their opinion to improve the present condition of landfill operation.

ii) Contents of the Interview Survey

Survey target and Number of Samples

- Site Manager (SM, 1 person)
- Landfill Instructor (LI, 12 persons）
- Weighbridge Operator (WB, 12persons)
- Cleaner (CN, 12 persons）
- Car washing staff (CW, 2 persons,）
- Bulldozer Operator (BO, 12 persons）
- Excavator Operator (EO, 12 persons）
- Wheel loader Operator (WO, 12 persons）

Frequency for the survey

- 3 times (June-2009, October-2009 and February-2010)

Survey implementation period

- First time : June-2009 – June-2009
- Second time : October-2009 – October-2009
- Third time : February-2010 – February- 2010

Surveyor

- Mr. AHM Abdulla Harun (DCC）
- Mr. Masahiro Saito and Mr. Mostafizur Rahman (JET)

iii) Contents of Questionnaire

Table 4.5-20 Explanation of Contents of the Survey

Sl. No	Item	SM	L I	WB	CN	CW	BO	EO	WO
1	Manage the landfill staff and assume responsibility for their safety	○	—	—	—	—	—	—	—
2	Develop the annual operation plan	○	—	—	—	—	—	—	—

3	Manage the waste filling operation	○	—	—	—	—	—	—	—
4	Manage the landfill facility	○	—	—	—	—	—	—	—
5	Manage the leachate aeration and re-circulation system and leachate pond	○	—	—	—	—	—	—	—
7	Prepare the operation budget and review the expenditures	○	—	—	—	—	—	—	—
8	Report (Daily operation records) to the WMD	○	—	—	—	—	—	—	—
9	Held on weekly meeting	○	—	—	—	—	—	—	—
10.	Direct the waste trucks to the disposal cell	—	○	—	—	—	—	—	—
11.	Manage the heavy equipment operations	—	○	—	—	—	—	—	—
12.	Daily soil cover application	—	○	—	—	—	—	—	—
13.	Preparation of new waste disposal cell	—	○	—	—	—	—	—	—
14.	Maintain the daily operation records	—	○	—	—	—	—	—	—
15.	Slope arrangement at periphery	—	○	—	—	—	—	—	—
16.	Random check of incoming waste	—	○	—	—	—	—	—	—
17.	Keep office hours?	—	○	○	○	—	—	—	—
18.	Transfer of duties	—	○	○	—	—	—	—	—
19.	Maintain a daily records of the incoming waste	—	—	○	—	—	—	—	—
20.	Report to site manager	—	—	○	—	—	—	—	—
21	Confirm the site situation before starting cleaning works	—	—	—	○	—	—	—	—
22.	Premeditated on-site cleaning	—	—	—	○	—	—	—	—
23.	Appropriate car washing	—	—	—	—	○	—	—	—
24.	Management of car wash pool	—	—	—	—	○	—	—	—
25.	Daily inspection of car wash equipment	—	—	—	—	○	—	—	—
26.	Assist in simple repair and maintenance works	—	—	—	—	○	○	○	○
27.	Daily inspection of equipment	—	—	—	—	○	○	○	○
28.	Appropriate spreading of waste	—	—	—	—	—	○	○	—
29.	Adequate compaction of waste	—	—	—	—	—	○	—	—
30.	Marking of a gentle waste incline	—	—	—	—	—	○	—	—
31.	Daily soil cover work	—	—	—	—	—	○	—	—
32.	Support unloading of waste from the open truck	—	—	—	—	—	—	○	—
33	Removal and cleaning of the waste from operation road and dumping platform	○	—	—	—	—	—	—	○

(Note) SM; Site Manager, LI: Landfill Instructor, WB: Weighbridge Operator, CN: Cleaner, CW: Car Washing Staff, BO: Bulldozer Operator, EO: Excavator Operator, WO: Wheel Loader Operator

iv) Special requirement/ comments to improve landfill operation

Results of the survey:

- Questions (Q1 to Q8) set for the site manager was only one who answered by him. Hence, his survey results varied between 100% normal and 100% good. Site manager mainly gave his feedback regarding managerial issues of landfill operation and a positive change in his opinion has been observed in the second survey.
- Landfill instructors and inspectors were asked to give their feedback about question Q9 to Q15 solely. Regarding daily soil cover application they strongly mentioned very bad comments as it has not been done regularly. But from the interview it was revealed that they understand the importance of daily soil cover application for sanitary landfill operation.
- They suggested for strong initiatives from the higher authority for continuous daily soil cover application. However, from the landfill budget LMU is carrying out final soil covering in the completed dumping areas. Hence in the second survey some portion (11%) of the participants commented it as good.
- Regarding preparation of waste cell (Q12), maintaining operation records (Q13) in both surveys majority participants has commented good'. But for the slope arrangement at periphery (Q14) they mainly commented 'very bad' as they were unable to manage the heavy equipment operators. However by contractor LMU prepares the peripheral slope.
- Regarding random (Q15) checking of the incoming waste, they gave a mixed opinions in both surveys; However, in the second survey, percentage of bad comment reduced as through first survey they became aware of their duty to check the waste randomly and accept only the municipal waste in the dump site.
- For keeping office hour (Q16) landfill instructors, inspectors, weighbridge operators and cleaner were asked to give opinions. Overall impression mostly is either good or very good.
- LMU has emphasized maintaining of office hours (Q17) of all staffs at site and keeping the record and checking their attendance regularly. Weighbridge operators and cleaners were asked about transfer of duties and they mostly commented good and very good.
- Weighbridge operators were not keeping daily record of incoming waste (Q18) separately other than data entry in the computer. However, different formats of weighbridge report have been introduced later at site and they are now following it properly.
- Regular reporting to site manager (Q20) about weighbridge operation had been done very well. Cleaners were asked about the confirmation of site situation before start of work (Q21) and premeditated on-site cleaning (Q22) and their impression were very good and good in both surveys.
- Carwash pool staffs were asked to give comment on the appropriate washing of the vehicles (23), management of car wash pool (24) and daily inspection of washing equipments (Q25). All three issues they confirmed to be good or very good.
- Assisting in small repair work of the equipments (Q26) car wash pool staffs and all heavy equipment operators gave comment mostly good or very good and a small portion as normal.
- Regarding daily inspection of heavy equipments (Q27) all heavy equipment operators gave comment and they said it to be very good, good mostly and a small portion in both survey mentioned it to be normal.
- Regarding appropriate spreading of waste (Q28) bull dozer operators mentioned mostly normal and small portion as very good. However in the second survey portion of very good comment increased. Regarding adequate compaction (Q29) in the first survey bull dozer operators mentions normal (100%) but in the second survey they gave mixed opinion with significant portion (38%) with bad comments. They claimed separate hour for the compaction of waste as volume of incoming waste too high to manage spreading properly.
- Regarding making gentle slope of waste (Q30) bull dozer operators mostly mentioned (more than 60%) bad and for daily soil cover (Q31) they mentioned mostly very bad. Excavator operator supports unloading of waste from the open truck (Q32) properly, which is evident from both surveys.
- Wheel dozer operators gave mixed comment regarding removal and cleaning of waste from the operation road dumping platform (Q33). However in the first survey 33% of them mentioned it to be bad with 33% normal & 33% good but in second survey 33% of them mentioned it to be very

good with 33% normal & 33% good.

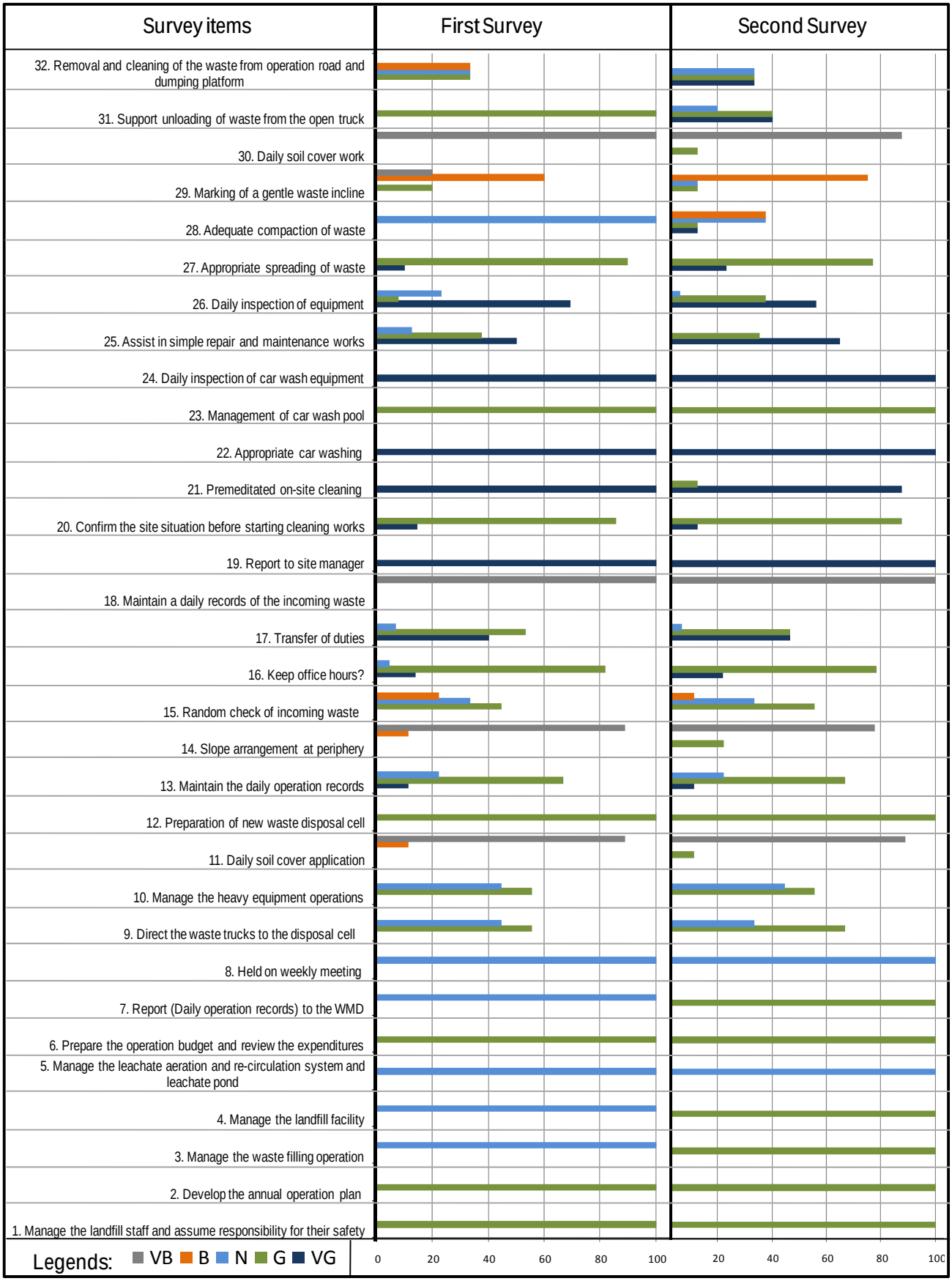


Figure 4.5-17 Result of the interviews

Table: 4.5-21 Results of interview surveys (%)

sl. No.	Survey Items	First Survey					Second Survey				
		VG	G	N	B	VB	VG	G	N	B	VB
1	Manage the landfill staff and assume responsibility for their safety	0	100	0	0	0	0	100	0	0	0
2	Develop the annual operation plan	0	100	0	0	0	0	100	0	0	0
3	Manage the waste filling operation	0	0	100	0	0	0	100	0	0	0
4	Manage the landfill facility	0	0	100	0	0	0	100	0	0	0
5	Manage the leachate aeration and re-circulation system and leachate pond	0	0	100	0	0	0	0	100	0	0
6	Prepare the operation budget and review the expenditures	0	100	0	0	0	0	100	0	0	0
7	Report (Daily operation records) to the WMD	0	0	100	0	0	0	100	0	0	0
8	Held on weekly meeting	0	0	100	0	0	0	0	100	0	0
9	Direct the waste trucks to the disposal cell	0	56	44	0	0	0	67	33	0	0
10	Manage the heavy equipment operations	0	56	44	0	0	0	56	44	0	0
11	Daily soil cover application	0	0	0	11	89	0	11	0	0	89
12	Preparation of new waste disposal cell	0	100	0	0	0	0	100	0	0	0
13	Maintain the daily operation records	11	67	22	0	0	11	67	22	0	0
14	Slope arrangement at periphery	0	0	0	11	89	0	22	0	0	78
15	Random check of incoming waste	0	44	33	22	0	0	56	33	11	0
16	Keep office hours?	14	82	5	0	0	22	78	0	0	0
17	Transfer of duties	40	53	7	0	0	47	47	7	0	0
18	Maintain a daily records of the incoming waste	0	0	0	0	100	0	0	0	0	100
19	Report to site manager	100	0	0	0	0	100	0	0	0	0
20	Confirm the site situation before starting cleaning works	14	86	0	0	0	13	88	0	0	0
21	Premeditated on-site cleaning	100	0	0	0	0	88	13	0	0	0
22	Appropriate car washing	100	0	0	0	0	100	0	0	0	0
23	Management of car wash pool	0	100	0	0	0	0	100	0	0	0
24	Daily inspection of car wash equipment	100	0	0	0	0	100	0	0	0	0
25	Assist in simple repair and maintenance works	50	38	13	0	0	65	35	0	0	0
26	Daily inspection of equipment	69	8	23	0	0	56	38	6	0	0
27	Appropriate spreading of waste	10	90	0	0	0	23	77	0	0	0
28	Adequate compaction of waste	0	0	100	0	0	13	13	38	38	0
29	Marking of a gentle waste incline	0	20	0	60	20	0	13	13	75	0
30	Daily soil cover work	0	0	0	0	100	0	13	0	0	88
31	Support unloading of waste from the open truck	0	100	0	0	0	40	40	20	0	0
32	Removal and cleaning of the waste from operation road and dumping platform	0	33	33	33	0	33	33	33	0	0

Table 4.5-22 Special comments and countermeasure

Sl. No.	Special comment	Commented by	Countermeasure adopted
1	Dictation light (torch light) for night duty	Dumping Instructor	LMU will arrange the facility
2	Incentive for the landfill worker	Dumping Instructor, Cleaner	Unless the cleaners become permanent staffs of DCC, this facility cannot be availed
3	Too high health risk	Dumping Instructor	Safety gears shall be used properly
4	Umbrella/ rain coat	DI, Heavy Equipment Operator	LMU shall arrange it
5	Medicine for the first aid box	Dumping Instructor, Cleaner	LMU will try to get approval of getting medicine from health department of DCC regularly
6	Still camera required for record keeping	Dumping Instructor	Will be considered in future
7	Wireless required for coordination	Dumping Instructor	Officially wireless has been allocated for Matuail but due to inconvenience of use it not being deployed in current operation
8	Marking to guide the heavy equipment operators will be useful	Dumping Instructor	Should be arranged by LMU time to time
9	Landfill sheds are not suitable for the day time for becoming very hot	Dumping Instructor	There is no other suitable option
10	No job security	Weighbridge operator	Beyond scope of LMU
11	Transport facility required	Weighbridge operator, Cleaner, Heavy equipment operator	Beyond scope of LMU
12	Drinking water	Weighbridge operator, Cleaner, Heavy equipment operator	Water jar will be arranged to store water and more filter will be ensured
13	Toiler facility	Weighbridge operator, Cleaner, Car Wash pool staffs, Heavy equipment operator	Toilet facility will be repaired and fixed by the contractor very soon.
14	Computer room should not be used by other staff for spending idle time	Weighbridge operator	Waiting room will be arranged for individual working groups.
15	No holiday	Weighbridge operator	Initiatives shall be taken for roster holiday facility for the operators
16	Computer training for regular maintenance and troubleshooting of the weighbridge computers	Weighbridge operator	Shall be discussed in Weekly meeting
17	More cleaner required	Cleaner	Not possible right now but request will be sent later
18	Washing facility insufficient	Cleaner	Will be ensured by the LMU
19	High speed of the trucks in the site is risky	Cleaner	Request will be made to transport department to instruct the drivers to control their speed after entering the site
20	Sitting arrangement in the control area	Car wash pool staffs, Heavy equipment	Contractor will be engaged for constructing sitting arrangements for

Sl. No.	Special comment	Commented by	Countermeasure adopted
		operator	different work group.
21	Fan for the mosque (ceiling fan)	Heavy equipment operator	Will be arranged by LMU
22	Stock of waste from night time (3:00pm-7:00pm) creates huge problem in the day time	Heavy equipment operator	One bull dozer shall be allocated in the night time
23	Platform size is small, hence difficult to manage	Heavy equipment operator	Arrange different platform for the private trucks
24	Separate hour for compaction by bull dozer	Heavy equipment operator	Enough compaction can be ensured by the regular waste dressing action carried out by the bull dozers.
25	Restrict outsiders entry	Heavy equipment operator	Security guards shall be instructed to stop trespasser
26	Steel plates should be welded together	Heavy equipment operator	Necessary measures shall be taken in this regards in future

(2) Good Practices, Problems and Feedback Identified

Good practices, problems and feedback to subsequent activities identified through this activity are shown in Table 4.5-23.

Table 4.5-23 Good practices, problems and feedback identified

Good Practices for Successful Implementation	【Matuail landfill site】 ➢ DCC has become able to carry out interview survey with local staff and Landfill staff. ➢ DCC improved it on the basis of a result of Interview survey. ✧ For example, it is a harmful insect and the issue of bad smell. ✧ DCC installed final soil cover constantly.
Problems, Obstacles and Limitations Hindering Successful Implementation	【Matuail landfill site】 ➢ DCC established a committee of a member including DOE and was going to evaluate the improvement situation of landfill site. ➢ However, there was not the outside evaluation from the issue of BELA because relations with DOE were not good.
Measures Taken to Solve the Problems	【Matuail landfill site】 ➢ Because DCC established a committee and was not able to evaluate the improvement situation of disposal ground, DCC changed it in interview survey to the person concerned.
Feedback to Subsequent Activities	1) Continuation of Good Practices in the Activity and Application in Other Activities ➢ Introducing interview survey of C/P capacity improvement evaluation to other activities. 2) Necessity for Reviewing Methodology ➢ Nothing in particular. 3) Necessity for Reviewing Expected Results ➢ Because of not good relationship between DCC and DOE, it couldn't implement evaluation done by outside including DOE. 4) Required Supports from Outside the Group ➢ Nothing in particular.

4.6 Activities for Output 5

4.6.1 Activity 5.1: To Develop Financial Reports

The following activities were planned and implemented to develop the financial report over the period of project years. These activities were done by the Financial Management Group (FMG) formed with members of the WMD counterpart, JET and local staff of JET.

- To monitor regularly for smooth data collection
- To collect actual cost data and actual revenue data (periodically monthly)
- To input data and output annual budget and monthly actual cost

The WMD counterpart collects and inputs the data, and analyzes the output. JET supervises the overall work and advises on technical matters.

(1) Result of Activity

1) Expected Result

The following results were expected from the activities mentioned above.

- Monitoring is made monthly.
- Necessary data is submitted to WMD by SWM-related department regularly.
- Input and output operation for collected data is carried out correctly.

Data collection is the elementary but essential step of FMG work. Prior to data collection, FMG made several direct visits to 10 zones and all SWM-related departments and held workshops during the early stage of the project year. The objectives of the direct visits and workshops were to provide them particular data forms to fill up, make them understand the importance of financial data and solicit them their continuous cooperation.

All zones and departments have been very much cooperative since the beginning of the project, so that FMG are successfully collecting data smoothly and regularly. This enables FMG to input the collected data and compile the monthly and yearly financial report regularly.

2) Actual Result

The data collection for FY 2006/07 started in May 2007. However, there were no computerized systems for SWM financial management. So FMG designed the particular EXCEL programming for monthly input and output. In addition, software "Tally System" was introduced in December 2007 particularly for data storage and financial management tool.

As a result of the above good cooperation of concerned departments and zones, the smooth collection of data, and the computerized system, the OVI5-1 "the annual financial report of each financial year is available in September of next financial year" has been attained.

Table 4.6-1 presents the actual SWM cost and revenue from FY 2006/07 until the first 4 months of FY 2010/11. The SWM cost is classified in two categories; that is, department wise and operation wise. The department-wise cost consists of 4 sectors: WMD, Transport Department, and Mechanical 1 and Mechanical 2 of Engineering Department. And the operation-wise cost consists of 4 sectors: road cleaning, drain cleaning, collection/transport and final disposal.

Table 4.6-1 Historical SWM Cost and Revenue (Taka)

Cost & Revenue Items	2006/07	2007/08	2008/09	2009/10	2010/11 July/October
1. Cost					
1) Personnel	446,141,083	479,757,545	604,869,245[1)]	682,556,029	283,529,480
2) Fuel	245,957,203	248,061,860	284,824,883	312,460,813	98,859,402
3) Repair	33,716,965	56,112,957	36,556,823	93,147,207[2)]	11,765,859
4) Material [3)]	10,430,661	5,021,856	13,218,100	18,536,435	4,632,080
5) Equipment [4)]	22,019,032	13,702,725	0	9,677,000	0
Subtotal	758,264,943	802,656,943	939,469,051	1,116,377,484	398,786,821
6) Depreciation [5)]	n/a	n/a	104,270,000	131,540,000	43,850,000[6)]
Total	758,264,943	802,656,943	1,043,739,051	1,247,917,484	442,636,821
7)Outsourcing (Privatization)	48,152,136	49,452,136	35,520,900	20,355,996	8,013,669
Grand Total	806,417,079	852,109,079	1,079,259,951	1,268,273,480	450,650,490
2. Revenue:					
1. Conservancy Tax	242,235,290	285,911,548	314,349,003	359,235,346	136,944,264

Note: 1) Year's personnel cost soared due to salary increase by 26%. 2) Year's repair cost soared due to package procurement of spare parts by Store & Purchase Dept. 3) Material cost varies from year to year due to package purchase by Store & Purchase Dept. 3) Material cost varies from year to year due to package purchase by Store & Purchase Dept. 4) Equipment cost such as hand trolley and container fluctuates from year to year due to then existing number of usable equipment. 5) Depreciation cost is calculated from FY 2008/09. 2009/10 cost increased due to Amin Bazar expansion and procurement of heavy equipment. 6) Provisionally calculated: (FY2009/10)131,540,000 x 4/12.

Source: DCC

Table 4.6-2 presents the operation-wise SWM unit cost of FY 2009/10 that is analyzed based on Table 4.6-1. The SWM unit cost is estimated at 1,735 Taka/ton or 25 US$/ton.

Table 4.6-2 Operation-wise SWM Unit Cost of FY 2009/10

Items	Unit	Road Cleaning	Drain Cleaning	Collection & Transport	Disposal	SWM Total
Final Disposed Amount	Ton / Year	-	-	731,500 ton [1)]		
SWM Expenditures	Taka / Year	622,320,157	27,576,785	531,301,505	87,075,033	1,268,273,480 [4)]
SWM Unit Cost	Taka / Ton	-	-	726	120	1,735 [4)]
	US$ / Ton [3)]	-	-	10	2	25 [4)]
For reference: FY 2002/03 Unit Cost estimated in Master Plan	US$ / Ton	-	-	-	-	16 [5)]

Note: 1) The amount that was actually surveyed at Matuail and Amin Bazar landfill sites by JET in August 2010 disregarding recycled amount within the disposal site.
2) Foreign exchange rate is assumed to be TK. 70 = US$ 1.
3) The figures include the depreciation cost that was 140 Taka/ton or US$ 2.00/ton.
4) The cost did not include the depreciation cost because of no data at that time.
Source: elaborated by JET based on DCC data

(a) Fixed Assets

Due to no existence of accurate SWM fixed assets list in DCC, FMG has started gathering the necessary data since the middle 2007. This objective is to clarify all mobilized funds for SWM (not only the operation cost but also investment cost) and to bring out the depreciation cost. As a result of two years' work, FMG finalized the SWM fixed assets as of June 2009 and computed the depreciation cost for the first time from FY 2008/09. Table 4.6-3 presents the SWM fixed assets as of June 2010 that amount to 2,788million Taka.

Table 4.6-3 Summary of SWM Fixed Assets (as of June 2010, Taka)

Fixed Assets [1)]	WMD	Transport	Mech-1	Mech-2	Total	Life Time [2)]
1. Vehicle		643,770,376			643,770,376	15
2. Heavy equipment				313,443,484	313,443,484	8
3. Container	68,630,048				68,630,048	5
4. Landfill	1,580,691,990				1,580,691,990	
1) Matuail	1,142,131,566				1,142,131,566	20
2) Amin Bazar	438,560,424				438,560,424	20
5. Cleaners' colony	175,145,799				175,145,799	30
6. Ward office	3,128,819				3,128,819	30
7. Motor cycle	325,500				325,500	10
8. Office equip/furniture	3,087,355				3,087,355	10
Total	1,831,009,511	643,770,376		313,443,484	2,788,223,371	

Note: 1) 100 vehicles and workshop facility donated by EGAP is not included.
2) Life time means the estimated economical life of each asset for the purpose of depreciation cost calculation.
Source: DCC

In addition to the assets in Table4.6-3, the vehicles and workshop facilities donated by EGAP of Japanese Government are to be registered in FY 2010/11 as presented in Table 4.6-4.

Table 4.6-4 Assets donated by EGAP

Assets	Type		Number	Taka
Vehicles	Container (CNG)	5 ton	30	24,447,000
		3 ton	15	10,248,000
	Arm-roll Container	Open type	10	7,371,000
		Closed type	10	8,612,000
	Compactor	5 ton	20	13,912,000
		2 ton	15	7,174,500
	Total		100	71,764,500
Workshop	Building and tools		1 set	32,496,000
Total				104,260,500

Source: DCC

(2) Good practice for Successful Implementation

Good practice and other related subjects for successful implementation of Activity 5.1 can be summarized as shown in Table 4.6-5.

Table 4.6-5 Good Practices, problems and feedback identified

Good Practice for Successful implementation	Specific Methodology applied in the implementation ➢ Regular collection of cost data from zones and related departments in every month ➢ Regular input of collected data and reviewing output in every month ➢ Preparation of semi-annual and annual financial reports regularly ➢ Completion of fixed assets data collection, and reflection of depreciation cost into the SWM cost ➢ Storing the data in accounting software Tally Specific Efforts made by the Group ➢ Frequent visit and discussion directly with staff of zones and related department for understanding of the project objectives and building up cooperative relationship ➢ Continuous check of the DCC inventory books with the actually existing fixed assets whether they actually exist or not
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Difficulty of comparison analysis ➢ SWM actual cost cannot be compared with the budget because the SWM budget has not been prepared yet properly. ➢ Unclearness of SWM related department cost ➢ SWM actual cost of Mechanical 1 and Mechanical 2 is unclear because the sectors' costs are difficult to divide into SWM operation and other operations.
Measures taken to solve the problems	➢ WMD budgeting work has started tentatively from FY 2010/11 budget by involving 10 zones and other SWM-related departments. ➢ For definite solution, full functioning of WMD is essential.
Feedback to subsequent Activities	➢ Activity 5.1 continue as a routine work.

4.6.2 Activity 5.2: To Prepare Proposal for Financial Plan

The following activities were planned and implemented to prepare proposal for financial plan. The main part of the activity 5.2 is to establish a bottom-up budget system for WMD based on zone level participation and moreover for entire SWM operation by merging with SWM-related departments.

- Analyze the data
- Analyze annual activities plans
- Prepare draft proposal

(1) Result of Activity

1) Expected Result

The following results were expected from the activities mentioned above.

- The SWM expenditures are incorporated with revenue.
- Annual plan of activities is prepared.
- Draft proposal is prepared.

2) Actual Result

(a) 1st and 2nd year: Study on DCC budget system

FMG made interviews with the responsible staff of zones and SWM-related departments in November 2007. The purpose of the interview was that FMG could understand the current DCC budget request system, obtain the department-wise budget allocation of FY2007/08 and study how to reflect it into the establishment of WMD budget system. However, FMG understood that the DCC budget system would be very much traditional; the budget process and final allocation is not clear enough. Accordingly, FMG concluded to develop the WMD budget system separately from the DCC budget system so far.

(b) 3rd Year: Establishment of budget committee and experimental zone-level budget preparation

According to FMG request in 2008, the budget committee (BC) was established in February 2009 and the head of the committee and 5 members were appointed. The followings are the objectives of BC establishment.

- To improve the WMD services in terms of adequate financial management through budget
- To set up responsible mechanism for budget preparation and execution
- To set up coordination mechanism among the various sections of WMD and related departments (Transport, Engineering and Store & Purchase)

The roles of BC and other concerned organizations are presented in Table 4.6-6.

Aiming at zone-level budgeting, FMG held a workshop for the conservancy officers of 10 zones with 2 themes in March 2009: 1) presentation by the Accounts Department - on DCC budget system and the importance of budget preparation, and 2) explanation of the experimental challenge for zone-level budget preparation by using provisional WMD budget system.

The experimental zone-level budget preparation was carried out by focusing on 3 costs that were personnel cost, material cost and container/hand-trolley cost. The results were compiled and fed back form FMG to zones.

Table 4.6-6 Respective Roles for Budget Formulation and Execution

Elapse	CWMO	Budget Committee (BC)	Budget Officer	Fields	Month of Work
1. Formulation of WMD 5-years' plan (as per WMD Directives)					
2. Formulation of WMD Year Budget					
0		Formulate annual activities plan (AAP) for year budget by reviewing 5-years' plan			Jan.
1	Approve AAP				Jan.
2	Upon receiving DCC budget call, order to prepare year budget				Feb.
3			Explain AAP and distribute budget forms to fields		Feb.
4				Discuss and set up field AAP respectively	Feb.
5				Prepare field year budget request	Feb.
6			Prepare WMD consolidated year budget		Feb.
7			Analyze year budget and report to Committee		Mar.
8		Review and conclude draft year budget			Mar.
9	Decide, signs and submit to Accounts Dept.				Mar.
10		Upon approval by Mayor, prepare final field-wise WMD year budget report			June
3. Execution of Year Budget					
	Budget control responsibility	Overall WMD budget control		Field budget control	Jul.-Jun.

Source: Discussion material of Budget Committee meeting in March 2009

(c) 4th year: First formulation of WMD FY 2010/11 budget

FMG and BC set up the budget formulating scheme and schedule for FY 2010/11 budget as per Table 4.6-6.

Various types of budget request forms were designed and distributed to zones; the forms were for manpower, cleaning materials, procurement of container and hand trolley, special cleaning program, special activities including community SWM, and development project.

The collected forms were input and compiled as WMD request after consolidation of both headquarter and fields as shown in Table 4.6-7. This was a first challenge for WMD to prepare the bottom-up budget. A lot of lessons were learned from it. These lessons would be effectively used for coming preparation of FY 2011/12 budget.

(d) 5th year: Formulation of WMD FY 2011/12 budget

The formulation work is to start from January 2011.

Table 4.6-7 FY 2010/11 Budget Request of WMD (Taka in million)

Budget Items of DCC		DCC	WMD	
		Approval	Request of headquarter after consolidation of fields	Request of fields
I. Revenue Expenditures				
1	Cleaners' salary	850.0	961.0	701.9 [1)]
2	Private waste management	70.0 [2)]	31.2	20.4
3	New vehicles	100.0	100.0	90.0
4	Container & hand trolley	35.0	50.0	66.0
5	Cleaning materials	30.0	40.0	12.4
6	Special cleaning program	15.0	15.0	20.0
7	Ward office construction	5.0	20.0	7.5
8	Uniform, umbrella, shoes	15.0	10.0	3.8
9	Training of officers & staff	10.0	5.0	-
10	Community waste management	4.5	10.0	4.9
11	Cleaners' colony construction	115.0	100.0	-
12	Dustbin	2.0	2.0	-
13	Motorcycles	10.0	5.0	5.0
14	Landfill operation	0.5	0.5	-
	Total	1,262.0	1,349.7	931.9
II. Development Expenditures				
1	Amin Bazar (JDCF)	179.8	179.8	179.8
2	Landfill maintenance	25.0	25.0	30.0
	Total	204.8	204.8	209.8
	Grand Total	1,466.8	1,554.5	1,142.0

Note: 1) The figures were low because the field side could not have data and information of salary increase at that time of February.
2) The figures were big because extension to all wards of Zone 9 was intended by DCC.
Source: DCC

Operation-wise budget formulation would be challenged upon receiving data from other departments such as Transport Department and Engineering Department.

(2) Good practices for Successful Implementation

Good practice and other related subjects for successful implementation of Activity 5.2 can be summarized as shown in Table 4.6-8.

Table 4.6-8 Good Practices, problems and feedback identified

Good Practice for Successful implementation	Specific Methodology applied in the implementation ➢ Experimental zone-level budget preparation ➢ Establishment of budget committee ➢ 1st WMD budget preparation for FY 2010/11 Specific Efforts made by the Group ➢ Direct interviews with 10 zones and other departments to understand actual DCC budget request system ➢ Holding workshop on bottom-up budget preparation ➢ Designing budget request forms ➢ Collection of the forms, input and consolidation of output

Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Budget is an important source of power for operation. So more frequent and serious discussions among the members of each field are required to secure budget allocation as much as possible. ➢ Each field manages the data manually. At least one computer per each zone is necessary for quick and adequate management.
Measures taken to solve the problems	➢ Presentation and instructions were made at the workshop and several meetings with FMG and BC. ➢ FMG is distributing the computer output of each zone operation results in order to make them familiar to computer system.
Feedback to subsequent Activities	➢ Development of an integrated DCC financial management system is required in collaboration with Accounts Department.

4.6.3 Activity 5.3: To Improve Procurement and Payment Process

The following activities were planned and implemented to improve procurement and payment process over the project period.

- Analyze the existing process and identify the problem
- Modified in the 5th year to: Analyze the existing process and identify the problem in disbursement of community SWM budget
- Find solutions
- Modified in the 5th year to: Community SWM budget disbursement
- Propose improvement

(1) Result of Activity

1) Expected Result

The following results were expected from the activities mentioned above.

- Collect adequate information about procurement and payment process
- Prepare proposal to improve process
- Modified in the 5th year to: Budget allocation
- Consistent procurement and payment process

2) Actual Result

The activities were made by focusing on 2 aspects: procurement process of DCC and community SWM budget disbursement of WMD.

(a) Procurement process of DCC: from 1st year to 4th year

Store & Purchase Department procures and supplies materials, equipment and others goods according to various departments' requirements which are time consuming. Sometimes the Store & Purchase Department cannot supply timely.

Discussion regarding SWM-related spare parts procurement was made between Store & Purchase Department and JET to analyze the existing process and identify the problems. The results of analysis and the suggested solutions are described in Chapter 4.4.3.

(b) Community SWM budget disbursement: in 5th year

As mentioned above, WMD challenged for the first time to formulate the budget of FY 2010/11. Then, the community SWM budget was also requested by zones according to the bottom-up process. The total request of zones amounted to 5.1million Taka. On the other hand, the amount approved by DCC was 4.5million Taka in FY 2010/11. The meeting was held in September among zones and BC to distribute 4.5million Taka into zones; however no decision was made. So the similar meeting is to be held in December.

(2) Good practices for Successful Implementation

Good practice and other related subjects for successful implementation of Activity 5.3 can be summarized as shown in Table 4.6-9.

Table 4.6-9 Good Practices, problems and feedback identified

Good Practice for Successful implementation	Specific Methodology applied in the implementation ➢ Community SWM budget was requested for the first time by zones Specific Efforts made by the Group ➢ The meeting on how to distribute the community SWM budget to zones
Problems, Obstacles and Limitations Hindering Successful Implementation	➢ Store & Purchase Department has all purchase power. ➢ The request of community SWM budget have not been planned and estimated scientifically by zones; so, more training and practice are still needed for zones.
Measures taken to solve the problems	➢ Frequent consultation was made to zones.
Feedback to subsequent Activities	➢ More training and practice are to be made through the consecutive budgeting work in FY 2011/12.

Chapter 5 Good Practices Obtained through Implementation of the Project

5.1 Selection of Good Practices

The Project Team, through discussion between JICA Expert Team (JET) and Dhaka City Corporation (DCC) Counterparts (C/Ps) in several Project Team meetings, has compiled eight good practices from the Project activities, which is stated as one of the Objectively Verifiable Indicators (OVIs) for Output 1 (Capacity for management and coordination of Solid Waste Management activities is improved.). The Team identified the good practices of the Project activities considering how innovative the approaches were compared to the conventional SWM practices in Bangladesh. This aspect has been considered in the selection criteria of the good practices and is articulated for each good practice mentioned in 5.2.

The Project Team considered four criteria for the selection of Good Practices of the Project: 1) approach, 2) challenges, 3) sustainability, and 4) replicability.

[Approach]: How much the approach of the practice is innovative compared to the situation before the Project started

[Challenges]: How much the practice was challenging to introduce and implement

[Sustainability]: How much the practice is sustainable in the long run after the Project terminates

[Replicability]: How much the practice can be replicated in other cities of Bangladesh

5.2 Description of Good Practices

Good Practices of the Project are as shown in Table 5.2-1.

Table 5.2-1 Eight Good Practices of the Project and Description of Selection Criteria

No.	Initiative	Selection Criteria
1	Development of SWM at the Ward level as Ward-based Approaches	**[Approach]** ➢ Before the Project, there were no common ground open to related actors to discuss and coordinate the activities towards improvement of situations at the ward level and the community level. In addition, since the functions of solid waste management were allocated to different departments within DCC, it was difficult to implemented integrated solid waste management. ➢ The project introduced the Ward-based Approach comprised of 4 components: 1) strengthening of ward SWM functions, 2) improvement of cleaners working conditions, 3) development of community-based SWM, and 4) improvement of secondary collection service. WBA, aiming to improve the collection system, involves various stakeholders such as collection and transportation by DCC, PCSPs, DCC cleaners, CIs, and COs, and waste generators such as residents. **[Challenges]** ➢ Coordination with departments other than WMD such as the Transport Department was difficult as first. ➢ Adjusting the WBA to the socio-economic situation and physical character of the ward takes time and requires careful consideration. **[Sustainability]** ➢ Official Order was issued by Chief Waste Management Officer (CWMO) of WMD to include the WBA activities as regular tasks of WMD staff. ➢ WBA booklet, which instructs detail of WBA activities, has been made up. ➢ WBA Core Team has been established under the supervision of CWMO, to plan, guide, and coordinate the WBA activities practically. **[Replicability]** ➢ WBA Manual has been prepared explaining detailed methods of WBA activities. Other City Corporations can refer to these materials to be replicated in their cities.
2	Awareness raising of the citizens and	**[Approach]** ➢ Before the Project, awareness on environmental issues and awareness on

No.	Initiative	Selection Criteria
	other stakeholders by Public Relations (PR) activities	participation for SWM were lacking among Dhaka City citizens. In addition, DCC didn't provide many opportunities for awareness campaign where communities could participate. Communication and collaboration with non-governmental organizations (NGOs) involved in environmental issues were also lacking. ➢ The Project conducted PR focusing on three method: 1) implementing community-based campaigns all over Dhaka City, 2) collaborating with NGOs for awareness raising campaigns, and 3) obtaining private sponsorship for advertisement in mass media. These methods were mainly used during Clean Dhaka Ward/ Clean Dhaka Week. **[Challenges]** ➢ There were some difficulties in coordination with NGOs and private sponsors and convincing them to participate in campaigns. Great effort and preparation were needed to mobilize communities for campaigns at the community level. **[Sustainability]** ➢ Experience in collaborating with NGOs to ensure wide campaign coverage and in obtaining private sponsorship for advertisement will likely to ensure sustainability of the activities. In addition, conducting such campaign by DCC itself in the 5th FY will reinforce the sustainability of PR activities. ➢ Public Awareness Guideline, which describes the methods of PR activities adopted during the Project, is prepared. **[Replicability]** ➢ Similar approach for PR on SWM can be replicated in other cities in Bangladesh.
3	Organizing Community Unit Working Group (CUWG) and supports for their activities linked with improvement of secondary collection by DCC	**[Approach]** ➢ Before the Project, most of the residents, with the exception of Ward 6 and Ward 65 where pilot project was implemented during the Development Study period, did not participate in any community activities, due to lack of recognition of importance on community participation. Often times, merely paying waste collection fees was considered as community participation for solid waste management. "Shomity" and "Ponchayt" (local association engaged in community security, waste collection, road widening, sports and culture, etc.) exist in some areas, but not all of them work on waste collection, let alone improving waste collection with participation of community people or coordinating with DCC to improve linkages between primary collection and secondary collection. ➢ CUWGs set up under the Project are the first of its kind in Dhaka to deal with SWM comprehensively through participation by the community people and to coordinate with DCC on planning and improving linkages between primary and secondary collection. CUWGs develop their Community Action Plans (CAPs), which set specific activities to be implemented by the communities through coordination with DCC. These CAPs are linked with the introduction of the new collection system. **[Challenges]** ➢ Political identity/ influence sometimes create conflict of interest. ➢ Ownership of the program has not yet been created by the communities. ➢ Community has not yet taken CAP as their routine work. **[Sustainability]** ➢ 39 CUWGs have been established and their activities are progressing with the support of Conservancy Inspectors (CIs) and Conservancy Officers (COs) of Waste Management Department (WMD). CAPs have been prepared involving various stakeholders of SWM in each ward. ➢ More than twenty (20 CIs know how to organize CUWGs and to sustain the activities of CUWGs. ➢ Kick Off Meeting (KOM) Booklet has been developed to explain to

No.	Initiative	Selection Criteria
		communities about community's involvement in SWM and CUWG activities. CUWG Training Manual and Ward-based Approach (WBA) Manual have been prepared to guide how to establish and to mobilize CUWGs to CIs and COs without experience in establishing CUWGs. **[Replicability]** ➢ Other City Corporations can refer to these materials to be replicated in their cities.
4	Develop guidelines and permission procedure for PCSPs	**[Approach]** ➢ Before the Project, permissions for PCSPs were not given in a systematic manner, resulting in lack of proper monitoring of their activities. Service recipients of the PCSPs were not involved in the decision making of selecting the PCSPs, although the residents are paying for the PCSPs' services. ➢ The Project, through series of discussion with DCC C/Ps, PCSP Association, and JET members, developed new forms for PCSP permission to enhance transparency in the permission process and to improve its service through proper monitoring and evaluation. The improved system using these forms has been field-tested in the WBA target wards and is now being used for all DCC wards. **[Challenges]** ➢ As this process was new to WMD, ensuring participation of community in the permission process of PCSPs and familiarizing CIs of WMD with the new forms took some time. ➢ Careful consideration on the political situation was necessary, as primary collection is highly influenced by the political situation. **[Sustainability]** ➢ The new system is likely to be used as DCC has officially approved the use of the new forms and the system and utilization of the new system has been trained to CIs and PCSPs. **[Replicability]** ➢ The new forms and the system can be shared with other City Corporations. However, since the way of management of primary collection differs among the City Corporations, careful analysis is necessary before introduction.
5	Introduction of fixed time station collection system for collection and transportation with compactor vehicles	**[Approach]** ➢ Before the Project, waste was dumped in dustbins and containers by residents themselves or by Primary Collection Service Providers (PCSPs). This waste was kept there for some time during the day until open trucks or container carriers came to collect the waste. This resulted in bad appearance of waste on the streets, emitting bad odor, and deteriorating sanitary conditions of the surrounding environment. ➢ Fixed time station collection system reduced the time of waste being placed on streets by determining the time and place for waste collected through primary collection to be handed over to compactor vehicles for secondary collection. This is being introduced in different areas of Dhaka City. **[Challenges]** ➢ Major challenges encountered during the introduction of this system were 1) coordination of timing between discharge by residents/ PCSPs and collection by compactors, 2) allocation of waste amount in an area between the first trip and second trip by compactors, and between waste to be collected by compactor and waste to be collected through containers, and 3) changing discharge time and method of residents/ PCSPs. ➢ These challenges were overcome by using various types of explanation materials and publications such as leaflets, and by conducting series of community meetings to obtain consensus among community members and PCSPs. ➢ As the system gradually takes root, and dustbins and containers in some locations are phased out, the new challenge will be to adapt the street sweeping waste activity with the station system.

No.	Initiative	Selection Criteria
		[Sustainability] ➢ Executive Engineer (Collection and Transport) (in charge) has led the introduction of the compactors very well, and has already coped with occasional trouble-shooting, and showed good coordination with Transport Department. ➢ Most CIs at the field level in charge of monitoring the operation of compactors and coordinating with PCSPs are managing quite well. ➢ Loading is being managed by cleaners and PCSPs, even when bowls and mats became worn out in some cases. **[Replicability]** ➢ Other City Corporations may be able to apply the methods above if they introduce compactors or if there is problem to construct dustbins or place containers.
6	Improvement in operation and maintenance of final disposal	**[Approach]** ➢ Before the Project, landfill operation at Matuail landfill site was not done systematically. Garbage was disposed disorderly, and harmful insect and fire occurred and the dumping site was full of leachate. Landfill operation suffered especially during the rainy season, when waste collection trucks could not climb up the road for dumping. ➢ The Project introduced 1) necessary Landfill staff and equipment, 2) appropriate landfill operation, 3) weekly meetings between Landfill Management Unit (LMU) and Mechanical Department, 4) steel plates, 5) construction of on site road, 6) daily record keeping of landfill operation (cleaners, weighbridge operators, dumping instructors, and carwash men), and 7) environmental monitoring according to Environmental Management Plan. **[Challenges]** ➢ It was difficult to make all the staffs understand the contents of daily record keeping and to make them conduct it as a routine. Coordination is lacking between the drivers, equipment operators, and the landfill instructors. ➢ Twenty-four hours of operation of landfill is a big challenge. ➢ Sharing of the weighbridge data is critical and challenging. **[Sustainability]** ➢ All the practices above are already being carried out by the staff of LMU. In addition, DVD on landfill operation and manual booklet on landfill has been developed. **[Replicability]** ➢ The DVD and manual booklet on landfill operation can be shared with other cities.
7	Analysis of actual SWM cost structure	**[Approach]** ➢ Entire SWM cost of DCC was very much unclear before the Project because: 1) the cost was scattered in 4 departments (Conservancy, Transport, Engineering and Store & Purchase), 2) the cost of 4 department was never integrated, 3) DCC has no SWM-related fixed asset inventory, and 4) any of these departments have no computer to record the operational expenditures. **[Challenges]** ➢ The Project designed the particular excel program and introduced an accounting software. ➢ The Project has continuously collected data from these 4 departments, input the collected data and output the integrated SWM cost since Financial Year (FY) 2006/07 separately in both categories of department-wise and operation-wise. ➢ The SWM-related fixed assets have been grasped through several checks between the DCC inventory-like book and the correspondent assets. In addition, the depreciation cost was calculated and reflected in the actual SWM cost of FY 2008/09 for the first time. ➢ Budgeting system for SWM has started since FY 2010/11 budget. This is a

No.	Initiative	Selection Criteria
		bottom-up budgeting aiming for zone-level participation. **[Sustainability]** ➢ This cost analysis work has been routine of WMD. ➢ Monthly department-wise and operation-wise actual SWM cost is being calculated within two weeks. And annual actual SWM cost is being calculated within two months after the end of financial year. **[Replicability]** ➢ This is an elementary management system but enough to clarify the SWM cost. So, the system can be applicable to other cities as an essential tool for their SWM cost management.
8	Establishment of a Secretariat of members of the six city corporations to coordinate and implement SWM programs together	**[Approach]** ➢ During the Development Study, the 1st Bangladesh SWM Conference was held in March 2006 and the Dhaka Declaration was issued ➢ The 2nd Bangladesh SWM Conference was held in February 2008 in Dhaka. The participants confirmed the importance of interaction amongst the six city corporations and implement programs together such as technical guidelines and input to national level SWM policies and strategies. ➢ The 3rd Bangladesh SWM Conference was held for the first time outside Dhaka, in Chittagong, in March 2009. The participants adopted a resolution to set up a Secretariat for the Bangladesh SWM Conference, with each member city corporation contributing time and effort to the Secretariat activities. The Secretariat would meet two-three times annually and follow up on the programs being implemented together by the six city corporations. **[Challenges]** ➢ This activity requires the support of the mayors in each of the City Corporations and has been delayed many times due to the delays in mayoral elections. It is now hoped that in the last JFY of the project, it will be possible to inaugurate the Secretariat and prepare its plan of action for the first year at least. ➢ The City Corporations have agreed to provide resources to the operation of the Secretariat. It will be necessary to ensure that these resources are provided in appropriate proportions and that the works related to the programs implementation be equally done by all the City Corporations. ➢ The Bangladesh SWM Conference requires additional funding and has been already held at Dhaka twice, and once at Chittagong. Khulna may be the likely candidate for the 4th Bangladesh SWM Conference and it has to secure the necessary funding to hold that occasion. ➢ The commitment of the newly elected mayors to the Bangladesh SWM Conference Secretariat is necessary. **[Sustainability]** ➢ Dhaka Declaration was issued by the six mayors in the 1st Bangladesh SWM Conference. ➢ A resolution to set-up the Secretariat was adopted in the 3rd Bangladesh SWM Conference. ➢ The sustainability will be further confirmed when each of the 6 city corporations allocates the required resources to run the Secretariat. **[Replicability]** ➢ Knowledge sharing and implementation of common programs in the SWM sector can be replicated to other sectors of public services provided by the local governments.

Chapter 6 Recommendations for Future Solid Waste Management in Dhaka City

The Project has been implemented with extensive activities for capacity development of Dhaka City Corporation (DCC), especially of Waste Management Department (WMD). The Project Team, composed of DCC Counterpart (C/P) Team and JICA Expert Team (JET), has implemented Project not only to achieve the Project Purpose but also for DCC to be able continue improvement in solid waste management (SWM).

Through implementation of this Project, capacity of DCC or WMD for SWM has been developed substantially. This chapter describes recommendations for WMD to sustain improvement of SWM in future with its own initiative to achieve the Overall Goal of the Project.

6.1 Recommendations to DCC

It is strongly recommended for DCC to continue, expand and enhance the Project activities as follows:

(1) Activities of Ward Based Approach

Ward Based Approach (WBA) has been strategically introduced with concepts of 1) decentralization of SWM services to ward level, 2) coordination among stakeholders; citizens as waste generator; Primary Service Collection Providers (PCSP) that provide door-to-door waste collection service and transport to DCC collection points; and DCC that is in charge of collection and transport of wastes from DCC collection points to final disposal sites, 3) improvement of interface between primary and secondary collection, and 4) Providing opportunities to DCC C/P for learning by doing.

Project Team believes that WBA has been successfully introduced and its continuation would be key to further improvement in SWM in Dhaka City.

* WBA 1: Strengthen Ward SWM Offices

The Project constructed or renovated 13 Ward SWM Offices. Ward SWM Offices are located in frontlines of DCC's SWM and are bases of Conservancy Inspectors (CIs) who manage solid waste in their respective wards. WMD has to construct/renovate ward offices in all wards at least in those wards where SWM services are not privatized. For the construction, cooperation of Estate Department is inevitable. For the construction as well as for the connection to electricity, water supply and sewerage services assistance of zonal engineers would be necessary. Support of zone offices would be required for the maintenance. Consensus among WMD, related DCC departments and respective zone offices is essential. WMD should take the responsibility for the coordination.

Monitoring on community participation in SWM, complaints and opinions of the residents, situation of collection and transport, and reporting of the monitoring results is a basis of SWM. The Project has developed reporting forms from CIs and Conservancy Officers (COs) to Assistant CWMO at zone level and WMD Headquarters. All CIs and COs have to monitor situations regarding SWM in their respective wards and to report the results to the respective zone offices.

CIs and COs, after grasping the situations regarding SWM, have to solve problems, respond to complaints and implement improvement activities as much as possible at ward level. If not possible, they have to request and obtain necessary supports from zone level or WMD Headquarters,

* WBA 2: Improve DCC cleaners' working conditions

Cleaners are the forefront workers to clean Dhaka. Despite their importance, their working environment was not properly taken care of. They are facing risks for diseases, injuries and traffic accidents. WBA 2 is dealing with this important issues of SWM. During the Project, WBA 2 has been extended to 46 wards. WBA 2 has to be expanded by WMD to all wards, except those wards where cleaning service are privatized. Safety gears and first aid materials have to be continuously supplied also in wards where WBA2 have already covered. As many of the cleaners, including those whose wards have already covered with WBA 2, are not familiar with to using safety gears, use of safety gears and first aid materials has to be carefully monitored and guided for the proper use.

Though Safety and Sanitation Committees (SSC) have been established in most of WBA 2 wards, meetings and activities of the committees have just started and not yet regularly done. Monitoring and support for meetings and activities of SSC is recommended to make them sustainable.

Cleaners' Working Manual contains important issues to assure safe and sanitary working conditions of cleaners and to improve efficiency of cleaning works. While some CIs have attained good results by using the manual, many CIs are on the way. Further CIs' and COs' guidance and supervision with the manual is necessary for safe and sanitary working conditions of cleaners and for improved efficiency. Supervision and support for the purpose by WMD Headquarters are also important.

* WBA 3: Promote Community Participation in SWM

WBA 3 has been successfully introduced in 18 wards. Gradual Expansion of WBA 3 is required until it covers all wards, at least those wards where SWM services are not privatized. It should be noted that when the Project introduces activities of WBA 3 and 4, the activities cover only one or two Community Units (generally a ward is divided into around five Community Units). WBA 3 and 4 should be expanded to other Community Units of the existing target wards. WMD has to carefully select new target wards for the expansion considering capacity of the staff in Conservancy Wing of WMD and their capacity development as well as available budget. At the moment, it is estimated that the expansion could be made in three wards for a year.

During the Project period, 40 CIs/COs have been trained in courses related community SWM and more than 20 CIs/COs have experienced community SWM activities, such as organizing Community Unit Working Group. Organogram of WMD has 113 CIs and 20 COs. Training should be continued for other CIs/COs who will implement WBA activities in their wards in future.

As discussed in Section 2.2 of this report, continuation of WBA in the existing target wards is essential to keep the level of SWM of the wards. Sometimes continuation would be more difficult than introduction or expansion.

* WBA 4: Improve the secondary collection service

WBA 4 is a core part of WBA and is a difficult part as well. Out of 100 vehicles provided Environmental Grant Aid Program (EGAP), JET has concentrated its effort for introduction of compactor vehicles, as they are new to DCC and most of 35 compactor vehicles have been in operation with five stand-by vehicles. As for arm-roll container carriers, 16 out of 20 are operated. Initiative of Collection and Transport Section of WMD as well as cooperation with Transport Department is essential for WBA 4.

* WBA Team Meetings and WBA Core Group Team Meeting

WBA Team and Core Group were set up at the end of the 4th JFY for promotion and management of WBA. So far their meetings have been held almost every week. The Core Group members consist of CIs who have taken leading role for promotion and COs who have supported the CIs. As their ranks are low and Additional CWMO, who was the leader of the Team and the Group, retired in January 2011, WBA Core Group has to be strengthened in order to continue steadily and expand WBA activities to all wards. Monitoring, supervision and support by WMD Headquarter are required to expand WBA to all wards as ordinary job of WMD staff.

(2) Development of Waste Management Department

A total of 120 staff recruitments are required for staffing to WMD. Institutional development is a keen task for WMD to sustain and expand Project activities by itself, utilizing results, outcomes and achievement of the Project. Furthermore, Additional CWMO and Deputy CWMO retired recently because of their age and these posts are yet to be filled up. In order for DCC to continue and sustain SWM improvement, DCC should promptly proceed staffing to WMD according to the approved organogram and fill up the vacant posts. Recruitment of Assistant CWMOs for Community SWM and for each of the ten zones is highly important for decentralized SWM as well as for continuation and expansion of WBA.

As the current organization structure is the products of compromises, further organizational development in line with the proposal in the Clean Dhaka Master Plan, especially organizational reform for decentralization of collection and transport is highly recommendable after the completion of the current staffing.

(3) Capacity Development of WMD Staff

Project Team has put high priority on capacity development, providing various opportunities for off-the-job training (Off-JT), such as training in Japan and third countries, that for Participatory Rural Appraisal (PRA) and training-of-trainers (TOT), and on-the-job training (OJT). WMD has to continue to promote capacity development of its staff by effectively using DCC's training budget.

(4) Annual Plan and Budget Proposal

Preparation of annual plans is a core element to continuously grade-up SWM. Continuous planning-implementation-monitoring-feedback of annual plans are highly recommendable, as proposed in Clean Dhaka Master Plan as annual operation plan. Process of bottom-up budgeting based on the annual plan and assessment with defined criteria can be recommended. Same as annual plans, budgeting-execution-monitoring-feedback process is also recommendable.

(5) Continuous Public Awareness Raising Activities with the Guidelines

To improve SWM, public awareness raising and cooperation of residents are essential. Role of mass media for public awareness raising is quite large. Project Team has taken efforts as much as possible to maintain good relations with mass media. As a result, many newspaper articles and TV programs that appreciate Project activities have been issued or diffused and they have contributed to better understanding of residents regarding activities of WMD, and given good impression to the citizens of DCC's SWM. It is recommended for WMD to continue the efforts to keep good relations with mass media.

Project Team also has placed emphasis on public relations and awareness raining activities, such as Clean Dhaka Week campaign. The Project has developed Public Awareness Raising Guidelines on SWM.

The Guidelines will help to make public awareness raising activities effective and efficient. Use of the Guidelines is recommended.

(6) Formulation of Clean Dhaka Master Plan II

Clean Dhaka Master Plan is the first master plan (M/P) on SWM in Bangladesh. Before formulation of the M/P, DCC's SWM was not based on the waste generation estimated and projected with sufficient surveys and studies. At that time deployment of waste collection vehicles and allocation of cleaners were decided by the Mayor upon request of Ward Commissioners and collected wastes were dumped at DCC's dump sites as open dumping. SWM works were scattered in various departments of DCC. Conservancy Department managed street sweeping, Mechanical Division-1 of Engineering Department procured and repaired waste collection vehicles, Transport Department operated the vehicles, and Mechanical Division-2 of Engineering Department managed heavy equipment and operators at final disposal sites. Coordination among these departments seems to have been insufficient. In contrast, in the development study situation on SWM was evaluated from technical, social, institutional and financial aspects. Waste generation was estimated and projected based on the results of waste amount and composition survey. Target amount of collected wastes set for every year until the target year of 2015. Projects/programs until the target year and priority projects/programs until 2010 were planned for promotion of community SWM, capacity enhancement of waste collection and transport, improvement of final disposal and improvement of administration and management. This Project is the technical support for DCC to implement the priority projects/programs.

With implementation of the Project, construction of final disposal facilities and vehicle procurement with financial assistance by the Government of Japan, collected and disposed waste amount almost reaches to the target amount defined in the M/P for 2010, i.e., 2,053 ton/day, and target ratio of 50% of the residents who satisfy with DCC's waste collection service, which is defined in the Project Purpose was also cleared, being increased from 36% in 2004. These achievements may show that M/P approach was effective. Thus, it is recommended that DCC should formulate the second M/P, adopting M/P approach. As the target year of Clean Dhaka Master Plan is 2015 and the formulation took one year and four months, WMD is recommended to start formulation of the next M/P since 2013.

(7) Support to Primary Collection Service Providers

Primary collection is an important element of SWM in Dhaka City, located in upstream of waste flow. PCSPs collect substantial portion of wastes from the generators and transport them to DCC collection points, being entrusted household heads or managers of the business premises. According to the relevant law, DCC can control and supervise waste discharge and carriage of the residents and business entities and hence can do the same for PCSPs. To supervise and control of PSCPs, objective performance monitoring and control based on the monitoring is required.

This Project has encouraged use of primary collection service and wider coverage of the service contributed to decrease in illegal open dumping and increase in collected wastes. A PCSP association had established recently, whose objectives of establishment are to improve service level of all PCSP, to assure unified service level and to raise social status of PCSPs. The objectives are favorable to DCC's SWM services. Support and collaboration of the PCSP Association are recommended.

(8) Improvement in Vehicle Maintenance

Vehicle maintenance is important to use valuable waste collection vehicles for long times. Training to newly assigned staff of WMD workshop will enable proper maintenance of the vehicles. It is recommended that sufficient training opportunities should be given to the staff of WMD workshop.

(9) Operation of Sanitary Landfill and Development of New Landfill

Matuail Landfill is operated by temporally assigned members of Landfill Management Unit (LMU). Immediate permanent staffing to LMU is of keen necessity. As the existing LMU staff have operated the sanitary landfill at Matuail since the commissioning in October 2007 almost properly under the guidance of the JICA Expert, techniques, know-how and experiences of the existing LMU staff should be considered for permanent staffing. At least, technical transfer from the existing staff to newly employed staff should be assured. For welfare of LMU members, proper shifting should be arranged.

As for Amin Bazar, the landfill is operated with a few heavy equipment operators. As landfill facility construction is completed except those for leachate treatment and others, DCC has to organize another LMU and start appropriate operation promptly.

Service life of Matuail Landfill facilities will end in 2015 and that of Amin Bazar in 2019. Site selection should be started according to relevant laws/regulations. Close consultation with RAJUK will be required.

(10) Enhancing Cost Analysis

A system to sum-up SWM cost has been establish by Financial Management Group and SWM cost analysis has been started. For efficient SWM, grade-up of the cost analysis is necessary. With supports from Engineering Wing and Conservancy Wing of WMD, level of the cost analysis would be raised. Information obtained from the cost analysis would contribute not only to efficient SWM, but also to preparation of criteria for budget assessment and to appropriate budgeting.

6.2 Recommendations to the Central Government, NGOs, and Other Relevant Organizations

Though the DCC's self-supporting endeavor is the most important for DCC to continue improvement of SWM, assistance of related ministry of the central government, NGOs JICA and other donors will also promote improvement.

(1) Decentralization of Operational Matters to City Corporations and Municipality (Central Government)

SWM services are actually delivered by city corporations, like DCC, or municipalities. As this Project introduced new things for SWM, sometimes the Project may face difficulty due to the opposition of the central government. For example, when DCC tried to create some posts, the central government enforced some existing rules without understanding what is necessary for city corporations or municipalities to deliver good SWM to the citizen.

Over intervention by the central government might hamper creativity or initiatives of city corporations or municipalities. It would be better for the central government to delegate power or decentralize operational functions.

(2) Enhancement of Regulatory Capacity (Government)

It seems that relevant ministry, such as Ministry of Environment and Forests (MoEF) or Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C) do not have enough capacity to discharge their regulatory functions regarding SWM. Laws/regulations related to waste classification, responsibilities of treatment and disposal of industrial or hazardous wastes are not sufficiently developed, some standards or guidelines are missing. While decentralizing operational functions, it would be better for the relevant ministries; MoEF and/or MoLGRD&C to enhance regulatory functions for effective implantation of SWM by city corporations and municipalities.

To enhance regulatory functions, MoEF and MoLGRD&C have to understand current conditions of SWM and social needs of the country, as well as to clarify demarcation between the two ministries. Coordination with Ministry of Industry and Ministry of Health and Family Welfare would be necessary.

(3) Management of Industrial, Hazardous and Medical Wastes (Government)

Sometimes hazardous wastes are discharged in containers/dustbins mixed with general wastes and transported to DCC's landfill sites and SWM workers are exposed to risks, or surrounding environment are affected. Industrial wastes and hazardous wastes, including infectious medical wastes, have to be treated and disposed according to the relevant laws/regulations. Development of laws/regulations and their enforcement would be necessary.

(4) Continuous of SWM Networking among City Corporations in Corporation with DCC (Ministry of Local Government, Rural Development and Cooperatives)

The Project included activities for SWM networking among six city corporations for sharing information, experiences and problems related to SWM. Continuation of SWM networking will help improvement of SWM of the six city corporations. With a project assisted with Asian Development Bank, MoLGRD&C is organizing a unit for enhancing regulatory functions on SWM. It would be recommendable for the unit to take this activity with support of DCC. Implementation of this activity will help much for the unit to develop capacity for regulation on SWM.

(5) Participation in Awareness Raising Activities (NGOs)

Some NGOs participated to activities in Clean Dhaka Week in the 4th JFY, held various events, such as drama play, cultural events, display in booths, etc., and supported communities for campaign activities. Some NGOs have experienced in awareness raising of the public in many field, such as water supply and sanitation sector. Participation of NGOs in awareness raising activities in SWM should be encouraged.

Chapter 7 Lessons Learned for Planning and Implementation of Other Projects

In this chapter, lessons learned through implementation of the Project are described for effective planning and implementation of other project, especially for other technical cooperation projects.

7.1 Effective Implementation of Technical Cooperation Projects with Parallel Physical Supports

As written in Chapter 1 of this report, the Project has accompanied physical supports. As mentioned in Chapter 2 and 3 the Project almost successfully achieve the Purpose and Outputs by utilizing facilities and equipment of physical projects/programs. Without facilities for final disposal, capacity development on operation and management sanitary landfill facilities was not possible. Counterpart (C/P) of Dhaka City Corporation (DCC) learned quite many things on waste collection and transport through initiating vehicle operation with compactor vehicles, arm-roll container carries.

Not limited to solid waste management (SWM) sector, in all sectors that require facility construction and equipment procurement, through planning and implementing physical projects, formulating operation plans and actually operating with experts, capacity development can be well realized, which is the purpose of technical cooperation.

7.2 Learning by Doing with Facility Construction and Provision of Equipment and Materials

With support of JICA, extensive and substantial facility construction (construction/renovation of eleven ward SWM offices, intermediate leachate treatment facility, etc), and provision of equipment and materials (steel plates for the wet season operation and testing kits for environmental monitoring at Matuail Landfill, safety gears for cleaners, and other various type of materials) have been carried out within the Project. DCC C/P could learn by actually doing activities with the facilities, equipment and materials.

7.3 Providing Opportunity of Presentation to Encourage Counterpart Participation at Initial Stage

As experienced in this Project, in early stage, it is often the case that staffs of C/P often hesitate to participate in the project activities as they cannot understand contents and meaning of inexperienced activities or cannot have confidence. In these cases, providing opportunities to make presentation to the third party, their colleagues or superiors frequently helps for their better understanding or raising prides and motivation of them. During the preparation of the preparation materials, C/P personnel can learn much and deepen the understanding. It would better to work together for the preparation, to have a rehearsal and to give comments before the presentation. For the experts, it is a good chance to know what C/P staff understands and what they do not and better guidance can be provided after the presentation.

7.4 Raising Prides of the Counterpart Staff

For SWM projects, C/P personnel often are not proud of their jobs because of historical background, the low social status or just simply dirtiness. It is necessary to frequently explain the importance of the job. Incentives, such as training opportunities and appreciation by their superiors or citizens, often raise their prides and motivation.

7.5 Difficulty of Project Implementation with Organizational Assumptions

Precondition of this Project include approval of WMD by the government and assumptions at the level of

Activity-Outputs include appropriate transfer and employment of staff. However, not only in Bangladesh but also in general, establishing a new organization or staffing to new organization often politicized. Involvement of unions and conflict of interest with other department makes staffing more time consuming, if not be stopped. Frequent change in the top managers or person in charge in regulated ministries makes situation worse. It can be said that establishing a new department can take enormous time and efforts. In this Project, approval of the establishment took one and half year, determination of salary grade for all posts and giving order for the establishing by the central government took another ten month. Even the after the order, clearance for recruitment is required. Staffing to WMD could not be realized by the end of the Project.

In case organizational reform is included in assumptions or preconditions, these difficulties should be well considered at the time of designing the project frame.

7.6 Networking for Sharing Experiences among Municipalities

Local government staffs are actually delivering services to the citizen and they often strongly desire opportunities for technical transfer, and information and experience sharing. Networking for sharing experiences would contribute much for better service delivery by each of the local governments. Even in the project whose target group remembers consist of staff of one local government, networking may contribute much to attaining outputs and project purpose.

For the leading local government, especially, networking will also be effective to enhance C/P's prides and motivation.

Networking activity among local governments induces involvement of the head of the local government, who is also a politician. As experienced in this Project, the activity is often affected by the political situation. Involvement of the regulatory ministry might work to avoid the political affects.

Appendix

Project Completion Report of
Project for Strengthening of Solid Waste Management in Dhaka City

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Appendix 1 Development of Project Design Matrix

1) Version 0

【**Project Title**】Project for Strengthening of Solid Waste Management in Dhaka City of Bangladesh

【**Target Groups**】❶Waste Management Department (Its approval process is in progress by upgrading Conservancy Department and Waste Management Division.) ❷Concerned Department ❸City residents

【**Date** 】October19 2006

【**Project Period**】February 2007-January 2011(4 years)

【**Target Area**】Under the jurisdiction of Dhaka City Corporation

【**PDM Version**】0

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
The solid waste management services of Dhaka City Corporation are sustained	**1 The waste collection ratio reach 66%(or 3054 ton/day) by the end of 2015 from the current level of 44%(or 1400 ton/day)**	**1 Reports of WMD Project Annual Reports Development Study Reports**	**1 National policy to give priority to solid waste management is sustained**
	2 The ratio of city residents in DCC who are satisfied with the collection services provided by DCC (or private companies in privatized zoned) reaches X % by the end of 2015 from the current level of 36%	**2 Attitude Survey/Opinion Survey Report to be conducted by DCC**	
Project Purpose			
The solid waste management services of Dhaka City Corporation are improved	**1 The waste collection ratio reaches 52.5%(or 2053ton/day) by the end of Project from the current level of 44%(or 1400 ton/day)**	**1 Project Progress Reports Project Annual Reports Development Study Reports**	**1 Commitment to attainment of Clean Dhaka Master Plan from Dhaka City Corporation and other stakeholders is sustained**
	2 The ratio of city residents in DCC who are satisfied with the collection services provided by DCC (or private companies in privatized zoned) reaches X % by the end of the Project from the current level of 36%	**2 Project Progress Reports Project Annual Reports Development Study Reports**	**2 Financial capacity of Dhaka City Corporation is strengthened**
Outputs			
1 Project management and coordination are in place	**1-1 The number of meetings, seminars and workshops organized by the Project reaches X by the end of the Project**	**1-1 Project Progress Reports Project Annual Reports**	**1 Commitment to attainment of Clean Dhaka Master Plan from Dhaka City Corporation and other stakeholders is sustained**
	1-2 The number of good practices and cases of SWM disseminated by the Project to other cities reaches X by the end of the Project	**1-2 Project Progress Reports Project Annual Reports**	
	1-3 The number of newsletters issued and posted by the Project on the website reaches X by the end of the Project	**1-3 Project Progress Reports Project Annual Reports**	**2 Natural disaster such as flood does not greatly affect the implementation of the Project**
2 Participatory solid waste management program is promoted** **It consists of (i) Community Solid Waste Management System, (ii) Supporting program for primary collection service providers, and (iii) Public participation and awareness raising of solid waste management activities	**2-1 The ratio of city residents in the target wards who are satisfied with primary collection reaches X % by the end of the Project**	**2-1 Project Progress Reports Project Annual Reports**	
	2-2 The coverage of primary collection service is increased in the target wards from Y to X by the end of the Project	**2-2 Project Progress Reports Project Annual Reports**	**3 Political and social disturbances in Dhaka City do not greatly affect the implementation of the Project**
	2-3 The number of case studies regarding ward or community initiatives for SWM activities reaches X by the end of the Project	**2-3 Project Progress Reports Project Annual Reports**	
	2-4 The ratio of ward-based SWM committee members who assess that their SWM activities are undertaken well reaches X% by the end of the	**2-4 Project Progress Reports Project Annual Reports**	
3 Capacity for solid waste collection and transportation is improved	**3-1 Efficiency of collected waste is improved from Y ton/trip to X ton/trip by the end of the Project**	**3-1 Project Progress Reports Project Annual Reports**	
	3-2 The collection and transportation cost is improved from Y taka/ton to X taka/ton by the end of the Project	**3-2 Project Progress Reports Project Annual Reports**	
4 Final disposal sites are operated and managed appropriately	**4-1 The ratio of respondents of regulatory bodies that assess that the final disposal sites is improved from Y % to X % by the end of the Project**	**4-1 Project Progress Reports Project Annual Reports**	
	4-2 Report on operation and maintenance modality of landfill site	**4-2 Project Progress Reports Project Annual Reports**	
5 Accounting system necessary for solid waste management is improved	**5-1 The financial analysis report is available in each year by the end of the Project**	**5-1 Project Progress Reports Project Annual Reports**	
	5-2 The financial plan is available in each year by the end of the Project	**5-2 Project Progress Reports Project Annual Reports**	

Activities	Inputs	
1-1 Hold monthly meetings among counterpart personnel of WMD, Japanese experts and concerned personnel in other departments	**Japanese Side**	1 Frequent transfer of trained counterpart personnel does not occur
	1 Dispatch of experts	
1-2 Compile annual Action Plans from Output 2, 3, 4 and 5	(1) Chief Adviser	2 Environmental Management Plan for Matuail and Environmental Impact Assessment for Amin Bazar are approved by the Department of Environment, Ministry of Environment and Forest without any delay
1-3 Advocate necessary actions related to SWM issues	(2) Solid Waste Management	
1-4 Compile good practices and lessons learned from the project activities	(3) Community Mobilization/Communication	
	(4) Optimization of Secondary Collection	
1-5 Promote public relations activities such as publication of newsletters and establishment of the website	(5) Landfill Management	
	(6) Waste Collection Vehicle and Equipment Maintenance Management	3 Japan Debt Cancellation Fund for Matuail landfill expansion is disbursed by the Government of Bangladesh without any delay
1-6 Disseminate DCC's SWM activities to other cities through Urban City Network	(7) Financial management	
	2 Provision of equipment	
1-7 Review and modify Clean Dhaka Mater Plan	3 Training of counterparts	
2-1 Review and analyze the previous interventions	4 Dispatch of study team when necessary	4 Matuail landfill expansion and Amin Bazar new landfill are constructed as scheduled by the Government of Bangladesh at its own expense
2-2 Review and finalize the existing draft Ward SWM Guideline	5 Allocation of operational costs for the Project	
2-3 Develop strategies for strengthening of community SWM in the previously and newly selected wards		
2-4 Develop strategies for supporting program for primary collection service providers	**Bangladesh Side**	
	1 Assignment of counterpart personnel	
2-5 Develop strategies for public participation and awareness raising of SWM activities	2 Provision of land, building, and other necessary facilities	
	3 Allocation of operational costs for the Project	
2-6 Make an annual Action Plan		
2-7 Conduct training on relevant community-based SWM issues for WMD counterpart personnel		**Pre-conditions**
		1 Waste Management Department is approved by the Government of Bangladesh
2-8 Conduct attitude survey among local people in selected wards		
2-9 Implement and monitor participatory SWM activities		2 Project concept, and roles and responsibilities of project stakeholders is shared and clearly understood among them
2-10 Assess the participatory SWM activities		
3-1 Make an annual Action Plan		3 General election does not adversely affect the commencement of the Project
3-2 Operate weighbridge at Matuail and Amin Bazar sites by DCC		
3-3 Identify every secondary collection route and its efficiency by route monitoring and employing weighbridge data		
3-4 Identify problematic and/or inefficient routes		
3-5 Optimize and reorganize routes to embrace a problematic and/or inefficient route		

	Activities	Inputs	
3-6	Establish route optimization practices		
3-7	Conduct detailed analysis of equipment maintenance and repair management		
3-8	Set up the indicators for equipment maintenance and repair management		
3-9	Take necessary measures for improvement		
4-1	Make an annual Action Plan		
4-2	Assess the changes/improvements of disposal sites by regulatory bodies		
4-3	Conduct on-the-job training on operation and maintenance of existing Matuail Landfill for WMD counterpart personnel		
4-4	Conduct environmental monitoring for operation and maintenance in existing Matuail landfill		
4-5	Formulate and submit Environmental Management Plan for Matuail landfill expansion to MOEF (by DCC)		
4-6	Construct Matuail landfill expansion (by DCC)		
4-7	Conduct on-the-job training on operation and maintenance of Matuail landfill expansion for WMD counterpart personnel		
4-8	Conduct environmental monitoring for operation and maintenance in Matuail landfill expansion		
4-9	Formulate and submit Environmental Impact Assessment for Amin Bazar new landfill to MOEF (by DCC)		
4-10	Secure necessary budget and construct Amin Bazar new landfill (by the Bangladesh side)		
4-11	Conduct on-the-job training on operation and maintenance of Amin Bazar new landfill for WMD counterpart personnel		
4-12	Conduct environmental monitoring for operation and maintenance in Amin Bazar new landfill		
4-13	Examine operation and maintenance modality including direct operation by DCC or contract/concession to private entity		
5-1	Make an annual Action Plan		
5-2	Conduct orientation program of accounting system for concerned staff members		
5-3	Collect actual cost data and actual revenue data periodically in every month		
5-4	Input data and output annual budget and monthly actual cost		
5-5	Develop a financial report		
5-6	Make a financial plan		
5-7	Develop a strategy for increasing revenue for SWM		

【Abbreviation】DCC (Dhaka City Corporation), MOEF (Ministry of Environment and Forest), SWM (Solid Waste Management), WMD (Waste Management Department)

2) Version 1

【**Project Title**】Project for Strengthening of Solid Waste Management in Dhaka City of Bangladesh

【**Target Groups**】❶Waste Management Department (Its approval process is in progress by upgrading Conservancy Department and Waste Management Division.) ❷Concerned Department ❸City residents

【**Date** 】24 May 2007

【**Project Period**】February 2007-January 2011(4 years)

【**Target Area**】Under the jurisdiction of Dhaka City Corporation

【**PDM Version**】1

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
The solid waste management services of Dhaka City Corporation are sustained and the sanitary environment of the city is improved.	**1 More than 66% (or 3054 ton/day) of wastes is transported to landfill sites and disposed properly by 2015.**	**1** Reports of WMD Project Evaluation Report	**1** National policy to give priority to solid waste management is sustained
	2 The ratio of city residents in DCC who are satisfied with the collection services provided by DCC (or private companies in privatized zoned) reaches 70% by the end of 2015 from the current level of 36%.	**2** Attitude Survey/Opinion Survey Report to be conducted by DCC/Baseline survey	
Project Purpose			
The solid waste management services of Dhaka City Corporation are improved	**1 More than 52.5%(or 2053ton/day) of wastes is transported to landfill sites and disposed properly by the end of Project.**	**1** Reports of WMD Project Evaluation Report	**1** Commitment to attainment of Clean Dhaka Master Plan from Dhaka City Corporation and other stakeholders is sustained
	2 The ratio of city residents in DCC who are satisfied with the collection services provided by DCC (or private companies in privatized zoned) reaches 50% by the end of the Project from the current level of 36% .	**2** Attitude Survey/Opinion Survey Report to be conducted by DCC/Baseline survey	**2** Financial capacity of Dhaka City Corporation is strengthened
Outputs			
1 Project management and coordination are in place	**1.1** Attendance Rate of the project meeting participants reaches to 80%.	**1.1** Minutes of the Project Team meeting	**1** Commitment to attainment of Clean Dhaka Master Plan from Dhaka City Corporation and other stakeholders is given
	1.2 Percentage of activities of all groups whose completion is delayed more than one month is reduced to 70%. .	**1.2** Project Progress Reports Project Annual Reports	
	1.3 Eight (8) good practices and cases are disseminated by the Project.	**1.3** Case study reports/leaflets Newsletters/newspaper articles/etc.	**2** Natural disaster such as flood does not greatly affect the implementation of the Project
	1.4 Twenty five (25)% of desseminated actions taken by organizations outside DCC as the results of dissemination and advocacy in the Project	**1.4** Project Progress Reports from other organizations	
2 Participatory solid waste management program is promoted.	**2.1** Number of illegal dumping points and scattering waste points are reduced by 30% in the targeted Wards by the end of the Project	**2.1** Project Progress Reports Physical observations	
	2.2 A community-based SWM Guideline is prepared and ready for use by the end of 2007/08 financial year of Bangladesh.	**2.2** Guideline publication	
	2.3 The number of city residents in the targeted Wards who are satisfied with primary collection is increased 70%.	**2.3** Customer satisfaction survey/Interview	
	2.4 Number of successful Community Initiatives for SWM reaches 20 by the end of the Project.	**2.4** Project Progress Reports	
	2.5 More than 60% of SWM service providers join the network supported by DCC by the end of the Project.	**2.5** Project Progress Reports	
	2.6 A coordination body at ward level (community-DCC-primary collection service providers) established in 20 wards by the end of the Project.	**2.6** Project Progress Reports	
3 Capacity for solid waste collection and transportation is improved	**3.1** The fuel and manpower input for collection and transportation is reduced from Y litre/ton and Y man/hour/ton to X litre/ton and X man/hour/ton by the end of the Project. (* the Indicator can be set after weigh bridge data analysis.)	**3.1** MIS data base Project Progress Reports	
	3.2 The ratio of transported waste to transportation capacity increased from 68% to 80% by the end of the Project.	**3.2** MIS data base Project Progress Reports	
	3.3 Monthly Operation Rate of the vehicle improved from 82.5% to 87.5% by the end of the Project.	**3.3** MIS data base Project Progress Reports	
	3.4 All monthly data are collected by the second week of next month.	**3.4** MIS data base Project Progress Reports	

	Outputs			
4	**Final disposal sites are operated and managed appropriately**	**4.1** Required budget for O&M is obtained each year	**4.1** DCC budget for SWM	
		4.2 Environmental parameter monitored as per Environmental Management Plan.	**4.2** Project Progress Reports Laboratory test reports	
		4.3 Soil covering on waste is done as per guideline.	**4.3** Project Progress Reports Physical observations	
		4.4 Leachate is treated as per guideline.	**4.4** Laboratory test report Project Progress Reports	
		4.5 Weight bridge operated and data provided regularly to SWM Headquarters.	**4.5** Weight bridge operations reports MIS data base	
5	**Accounting system necessary for solid waste management is improved**	**5.1** Annual Financial report is available each year by Sept next financial year.	**5.1** Project Progress Reports	
		5.2 Financial Plan is available each year by April.	**5.2** Project Progress Reports	
		5.3 Monthly report is available by the second week of next month.	**5.3** Project Progress Reports	
		5.4 Revenue collection strategy given to the DCC management by June 2008.	**5.4** Project Progress Reports Revenue collection strategy paper	

	Activities
1-1	Establishing Waste Management Department (by DCC)
1-2	Strengthening of Waste Management Department Human Resources and Institution *1 *2
1-3	To prepare Annual Activity Plans
1-4	Coordinating Project Activities
1-5	Awareness raising and public relations campaign on solid waste management
1-6	Development of solid waste management network of city corporations
1-7	To review and modify Clean Dhaka Master Plan
2-1	To develop Ward SWM Guideline
2-2	Organizing community people and support community level SWM activities *2
2-3	Improving primary collection permission and monitoring system
2-4	Supporting primary collection service providers to improve their services *2
2-5	Organizing awareness raising programs and environmental education programs in target wards
2-6	Coordinating among community people, primary collection service providers and DCC *2 *3
2-7	Conducting training programs for the counterparts
3-1	Conducting surveys and data collection and analysis to improve collection efficiency *3
3-2	Improving efficiency of collection system *1 *3
3-3	Improving the system of repair and maintenance of equipments
3-4	Training of technicians, repair mechanics, drivers, cleaners, and other workers *1
4-1	Sanitary landfill development
4-2	Sanitary landfill operation *1
4-3	Environmental monitoring
4-4	Evaluate landfill operation improvement
5-1	Develop financial reports
5-2	Formulate financial plans

Inputs

Japanese Side

1 Dispatch of experts

(1) Chief Adviser
(2) Solid Waste Management
(3) Community Mobilization/Communication
(4) Optimization of Secondary Collection
(5) Landfill Management
(6) Waste Collection Vehicle and Equipment Maintenance Management
(7) Financial management

2 Provision of equipment

3 Training of counterparts

4 Dispatch of study team when necessary

5 Allocation of operational costs for the Project

Bangladesh Side

1 Assignment of counterpart personnel

2 Provision of land, building, and other necessary facilities

3 Allocation of operational costs for the Project

1 Frequent transfer of trained counterpart personnel does not occur

2 Environmental Management Plan for Matuail and Environmental Impact Assessment for Amin Bazar are approved by the Department of Environment, Ministry of Environment and Forest

3 Japan Debt Cancellation Fund for Matuail landfill expansion is disbursed by the Government of Bangladesh without any delay

4 Matuail landfill expansion and Amin Bazar new landfill are constructed as scheduled by the Government of Bangladesh

Pre-conditions

1 Waste Management Department is approved by the Government of

2 Project concept, and roles and responsibilities of project stakeholders is shared and clearly understood among

<<Note>>

1) For the activities accompaneid with "(by DCC)" as well as for activities that are added in the PDM workshop and subsequent group meeting, strong initiative, including budget allocation, will be taken by DCC.
(Abbreviation) DCC (Dhaka City Corporation), MOEF (Ministry of Environment and Forest), SWM (Solid Waste Management), WMD (Waste Management Department)
*1 This activity includes Pilot Project 2 (Establishment of ward-level solid waste management offices and strengthening the function of ward offices)
*2 This activity includes Pilot Project 3 (New collection system)
*3 This activity includes Pilot Project 1 (Provision of safety gears and workers' manual to improve working environment)

3) Version 2

【**Project Title**】Project for Strengthening of Solid Waste Management in Dhaka City of Bangladesh

【**Target Groups**】❶Waste Management Department ❷Concerned Department ❸City residents

【**Date** 】20 Feb 2008

【**Project Period**】February 2007-January 2011(4 years)

【**Target Area**】Under the jurisdiction of Dhaka City Corporation

【**PDM Version**】2

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
The solid waste management services of Dhaka City Corporation are sustained and the sanitary environment of the city is improved.	**1** More than 66% (or 3,054 ton/day) of wastes are transported to landfill sites and disposed properly by 2015.	**1** Reports of WMD Project Evaluation Report	**1** National policy to give priority to solid waste management is sustained
	2 The ratio of city residents in DCC who are satisfied with the collection services provided by DCC (or private companies in privatized zones) reaches 70% by the end of 2015 from the current level of 36% (Master Plan Study, 2005).	**2** Attitude Survey/Opinion Survey Report to be conducted by DCC/Baseline survey	
Project Purpose			
The solid waste management services of Dhaka City Corporation are improved	**1** More than 52.5% (or 2,053ton/day) of wastes are transported to landfill sites and disposed properly by the end of Project.	**1** Reports of WMD Project Evaluation Report	**1** Commitment to attainment of Clean Dhaka Master Plan from Dhaka City Corporation and other stakeholders is sustained.
	2 The ratio of city residents in DCC who are satisfied with the collection services provided by DCC (or private companies in privatized zones) reaches 50% by the end of the Project from the current level of 36% (Master Plan Study, 2005).	**2** Attitude Survey/Opinion Survey Report to be conducted by DCC/Baseline survey	**2** Financial capacity of Dhaka City Corporation is strengthened.
Outputs			
1 Capacity for management and coordination of solid waste management activities is improved.	**1.1** Managers of Waste Management Department (WMD) can formulate Annual Activity Plans and budget proposal by the end of the Project.	**1.1** Minutes of the Project Team meeting	**1** Commitment to attainment of Clean Dhaka Master Plan from Dhaka City Corporation and other stakeholders is given.
	1.2 Percentage of Project's activities whose completion is delayed more than one month is reduced to 70% in the 5th JFY (April 2010 to March 2011)	**1.2** Project Progress Reports Project Annual Reports	**2** Natural disaster, such as flood and political conditions, such as elections, do not greatly affect the implementation of the Project.
	1.3 Eight (8) good practices and cases are disseminated by the Project.	**1.3** Case study reports/leaflets Newsletters/newspaper articles/etc.	**3** DCC allocates appropriate budget for solid waste management.
	1.4 Clean Dhaka Mater Plan is revised according to the change in social conditions and environmental consciousness of the citizens by the end of the Project.	**1.4** Project Progress Reports from other organizations	**4** Central Government gives required support for solid waste management of DCC.
2 Capacity for participatory solid waste management program is improved.	**2.1** More than 20 Conservancy Inspectors have obtained enough knowledge and skills and been motivated to promote ward-level community solid waste management by the end of the Project.	**2.1** Project Progress Reports Physical observations	
	2.2 Community-based SWM Guideline are prepared and ready for use by the end of 2007/08 financial year of Bangladesh.	**2.2** Guideline publication	
	2.3 Monitoring of registered primary collection service providers is conducted and fed-back regularly to improve their service.	**2.3** Customer satisfaction survey/Interview	
	2.4 Coordination among community, DCC and primary collection service providers is improved in target areas.	**2.4** Project Progress Reports	
	2.5 Number of successful community initiatives for solid waste management reaches 20 by the end of the Project.	**2.5** Project Progress Reports	
3 Capacity for solid waste collection and transportation is improved.	**3.1** Appropriate collection and transportation systems are formulated for representing areas in DCC jurisdiction by the end of the Project.	**3.1** MIS data base Project Progress Reports	
	3.2 Conservancy Inspectors, Cleaners, Drivers and Workshop Staff are trained and motivated to improve the efficiency of the collection and transportation.	**3.2** MIS data base Project Progress Reports	
	3.3 Coordination between Primary and Secondary Collection is enhanced to increase the efficiency of collection and transportation in target areas.	**3.3** MIS data base Project Progress Reports	
	3.4 Duration of repair time of the collection vehicles is decreased.	**3.4** MIS data base Project Progress Reports	

	Outputs			
4	**Capacity for operation and management of final disposal is improved.**	**4.1** Required staff for O&M of landfill are allocated and work properly since July 2008 in Matuail.	**4.1** DCC budget for SWM	
		4.2 Environmental parameters are monitored as per Environmental Management Plan since July 2008 at Matuail.	**4.2** Project Progress Reports Laboratory test reports	
		4.3 Waste placing, compaction, soil covering on waste and slope maintenance are operated adequately as per O&M manual. **4.4** Leachate is treated adequately as per O&M Manual.	**4.3** Project Progress Reports Physical observations **4.4** Laboratory test report Project Progress Reports	
		4.5 Weighbridge is operated and data are provided regularly to WMD's Headquarters.	**4.5** Weight bridge operations reports MIS data base	
5	**Capacity for financial management on solid waste management is improved.**	**5.1** Annual financial report of each financial year is available in September next financial year by the end of the Project.	**5.1** Project Progress Reports	
		5.2 Reports for financial planning are prepared in each financial year by April by the end of the Project.	**5.2** Project Progress Reports	
		5.3 Monthly reports on actual revenue and expenditure are available by the second week of next month by the end of the Project.	**5.3** Project Progress Reports	
		5.4 Control of expenditure for solid waste management is improved.	**5.4** Project Progress Reports	

Activities	**Inputs**	
1-1 To establish Waste Management Department (by DCC)	Japanese Side	1 Frequent transfer of trained counterpart personnel does not occur.
1-2 To strengthen human resources and institution of Waste Management Department *1 *2	1 Dispatch of experts (1) Chief Adviser	2 Environmental Management Plan for Matuail and Environmental Impact Assessment for Amin Bazar are approved by the Department of Environment, Ministry of Environment and Forest without any delay.
1-3 To prepare Annual Activity Plans	(2) Solid Waste Management	
1-4 To coordinate Project Activities	(3) Community Mobilization/Communication	
1-5 To raise awareness and to conduct public relations campaigns on solid waste management	(4) Optimization of Secondary Collection (5) Landfill Management	3 Japan Debt Cancellation Fund for Matuail landfill expansion is disbursed by the Government of Bangladesh without any delay.
1-6 To develop solid waste management network among city corporations	(6) Waste Collection Vehicle and Equipment Maintenance Management (7) Financial management	
1-7 To review and modify Clean Dhaka Master Plan	2 Provision of equipment	4 Amin Bazar landfill construction project is approved by the Government of Bangladesh without delay.
2-1 To develop Ward SWM Guideline	3 Training of counterparts	
2-2 To organize community people and support community level SWM activities *1*3	4 Dispatch of study team when necessary 5 Allocation of operational costs for the Project	5 Staff whose capacity has been developed in the Project and the Development Study is properly assigned.
2-3 To improve primary collection permission and monitoring system	Bangladesh Side	
2-4 To support primary collection service providers to	1 Assignment of counterpart personnel	6 DCC transfers staff to WMD and employs new staff appropriately without delay.
2-5 To organize awareness raising and environmental education programs in target wards *3	2 Provision of land, building, and other necessary facilities 3 Allocation of operational costs for the Project	7 DCC allocates appropriate budget to conduct the Project activities.
2-6 To coordinate among community people, primary collection service providers and DCC *2 *4		8 DCC transfers relevant assets to WMD properly without delay.
2-7 To conduct training programs for the counterparts on participatory SWM		9 DCC prepares enough offices for WMD appropriately without delay.
3-1 To conduct surveys and data collection and analysis for improvement of collection efficiency *4		
3-2 To improve efficiency of collection system *2*4		
3-3 To improve the system of repair and maintenance of		
3-4 To train technicians, repair mechanics, drivers, cleaners, and other workers *2		

Activities	Inputs	Pre-conditions
4-1 To develop sanitary landfill (by DCC)		1 Waste Management Department is approved by the Government of Bangladesh.
4-2 To operate and manage sanitary landfill *2		
4-3 To conduct environmental monitoring		
4-4 To evaluate landfill operation improvement		2 Project concept, and roles and responsibilities of project stakeholders is shared and clearly understood among them.
5-1 To develop financial reports		
5-2 To prepare proposal of financial plans		
5-3 To improve procurement and payment processes		

<<Note>>

1) For the activities accompanied with "(by DCC)" as well as for activities that are added in the PDM workshop and subsequent group meeting, strong initiative, including budget allocation, will be taken by DCC.

(Abbreviation) DCC (Dhaka City Corporation), SWM (Solid Waste Management), WMD (Waste Management Department)

*1 This activity includes parts of Ward-based Approach 1 (Construction/renovation of ward SWM offices and strengthening if their functions)

*2 This activity includes parts of Ward-based Approach 2 (Provision of safety gears and workers' manual to improve working environment)

*3 This activity includes parts of Ward-based Approach **3** (Promotion of participatory SWM)

*4 This activity includes parts of Ward-based Approach 4 (Introduction of new collection system/Improvement of existing)

4) Version 3

【**Project Title**】Project for Strengthening of Solid Waste Management in Dhaka City of Bangladesh
【**Project Period**】February 2007-January 2011(4 years)
【**Target Groups**】❶Waste Management Department ❷Concerned Department ❸City residents
【**Target Area**】Under the jurisdiction of Dhaka City Corporation
【**Date**】18 March 2010
【**PDM Version**】3

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The solid waste management services of Dhaka City Corporation are sustained and the sanitary environment of the city is improved.	1. More than 66% (or 3,054 ton/day) of wastes are transported to landfill sites and disposed properly by 2015. 2. The ratio of city residents in DCC who are satisfied with the collection services provided by DCC (or private companies in privatized zones) reaches 70% by the end of 2015 from the current level of 36% (Master Plan Study, 2005).	1. Reports of WMD, Project Evaluation Report 2. Awareness Survey/Opinion Survey Report to be conducted by DCC/Baseline survey	1. National policy to give priority to solid waste management is sustained.
Project Purpose The solid waste management services of Dhaka City Corporation are improved.	1. More than 52.5% (or 2,053ton/day) of wastes are transported to landfill sites and disposed properly by the end of Project. 2. The ratio of city residents in DCC who are satisfied with the collection services provided by DCC (or private companies in privatized zones) reaches 50% by the end of the Project from the current level of 36% (Master Plan Study, 2005).	1. Reports of WMD, Project Evaluation Report 2. Awareness Survey/Opinion Survey Report to be conducted by DCC/Baseline survey	1. Commitment to attainment of Clean Dhaka Master Plan from Dhaka City Corporation and other stakeholders is sustained. 2. Financial capacity of Dhaka City Corporation is strengthened.
Outputs 1. Capacity for management and coordination of solid waste management activities is improved.	1.1 Managers of Waste Management Department (WMD) can formulate Annual Activity Plans and budget proposal by the end of the Project. 1.2 Percentage of Project's activities whose completion is delayed more than one month is reduced to 70% in the 5th JFY (April 2010 to March 2011). 1.3 Eight (8) good practices and cases are disseminated by the Project. 1.4 Clean Dhaka Mater Plan is revised according to the change in social conditions and environmental consciousness of the citizens by the end of the Project. 1.5 Activities for Ward Based Approach are officially included in the job of WMD staff.	1.1 Project Progress Report 1.2 Project Progress Report 1.3 Leaftets, Newsletter and Newspater Articles 1.4 Report of Revised Master Plan, Project Progress Report 1.5 Office Order of DCC, Project Progress Report	1. Commitment to attainment of Clean Dhaka Master Plan from Dhaka City Corporation and other stakeholders is given. 2. Natural disaster, such as flood and political conditions, such as elections, do not greatly affect the implementation of the Project. 3. DCC allocates appropriate budget for solid waste management. 4. Central Government gives required support for solid waste management of DCC.
2. Capacity for participatory solid waste management program is improved.	2.1 More than 20 Conservancy Inspectors, Conservancy Supervising Inspectors and Conservancy Officers obtain enough knowledge and skills and are motivated to promote ward-level community solid waste management by the end of the Project. 2.2. Community-based SWM Guideline are prepared and ready for use by the end of 2007/08 financial year of Bangladesh. 2.3 Permission and monitoring system for primary collection service providers is improved and introduction of the improved system to whole Dhaka City starts. 2.4 Number of successful community initiatives reaches 20 by the end of the Project, through improved coordination among community, DCC and primary collection service providers.	2.1 Project Progress Report, Site Observation 2.2. Issued Guidelines 2.3 Awareness Survey/Opinion Survey Report 2.4 Project Progress Report	
3. Capacity for solid waste collection and transportation is improved.	3.1. New collection systems suitable to the conditions of Dhaka City are developed and introduced to more than 20 areas. 3.2 More than 50% of Conservancy Inspectors and Cleaners have become conscious on safety and sanitation. 3.3. More than 15 Conservancy Inspectors take initiatives for improvement of collection and transportation after they developed the capacity for the improvement. 3.4 Periodic maintenance for 127 vehicles is carried out.	3.1 Project Progress Report 3.2 Project Progress Report 3.3 Project Progress Report 3.4 Workshop Records, Project Progress Report	

4. Capacity for operation and management of final disposal is improved.	4.1 Required staff for O&M of landfill are allocated and work properly since July 2008 in Matuail. 4.2 Environmental parameters are monitored as per Environmental Management Plan since July 2008 at Matuail. 4.3 Waste placing, compaction, soil covering on waste and slope maintenance are operated adequately as per O&M manual. 4.4 Leachate is treated adequately as per O&M Manual. 4.5 Weighbridge is operated and data are provided regularly to WMD's Headquarters.	4.1 DCC budget for SWM 4.2 Project Progress Report 4.3 Project Progress Report 4.4 Project Progress Report 4.5 Project Progress Report	
5. Capacity for operation and management of final disposal is improved.	5.1 Annual financial report of each financial year is available in September next financial year by the end of the Project. 5.2 Reports for financial planning are prepared in each financial year by April by the end of the Project. 5.3 Monthly reports on actual revenue and expenditure are available by the second week of next month by the end of the Project. 5.4 Control of expenditure for solid waste management is improved.	5.1 Project Progress Report 5.2 Project Progress Report 5.3 Project Progress Report 5.4 Project Progress Report	

Activities 1－1 To establish Waste Management Department (by DCC) 1－2 To strengthen human resources and institution of Waste Management Department *1 *2 1－3 To prepare Annual Activity Plans 1－4 To coordinate Project Activities 1－5 To raise awareness and to conduct public relations campaigns on solid waste management 1－6 To develop solid waste management network among city corporations 1－7 To review and modify Clean Dhaka Master Plan 2－1 To develop Ward SWM Guideline 2－2 To organize community people and support community level SWM activities *1*3 2－3 To improve primary collection permission and monitoring system 2－4 To support primary collection service providers to improve their services *4 2－5 To organize awareness raising and environmental education programs in target wards *3 2－6 To coordinate among community people, primary collection service providers and DCC *2 *4 2－7 To conduct training programs for the counterparts on participatory SWM 3－1 To conduct surveys and data collection and analysis for improvement of collection efficiency *4 3－2 To improve efficiency of collection system *2*4 3－3 To improve the system of repair and maintenance of equipments 3－4 To train technicians, repair mechanics, drivers, cleaners, and other workers *2 4－1 To develop sanitary landfill (by DCC) 4－2 To operate and manage sanitary landfill 4－3 To conduct environmental monitoring	**Input** Japanese Side 1. Dispatch of experts (1) Chief Adviser (2) Solid Waste Management (3) Community Mobilization/Communication (4) Optimization of Secondary Collection (5) Landfill Management (6) Waste Collection Vehicle and Equipment Maintenance Management (7) Financial management 2. Provision of equipment 3. Training of counterparts 4. Dispatch of study team when necessary 5. Allocation of operational costs for the Project Bangladesh Side 1. Assignment of counterpart personnel 2. Provision of land, building, and other necessary facilities 3. Allocation of operational costs for the Project	1. Frequent transfer of trained counterpart personnel does not occur. 2. Environmental Management Plan for Matuail and Environmental Impact Assessment for Amin Bazar are approved by the Department of Environment, Ministry of Environment and Forest without any delay. 3. Japan Debt Cancellation Fund for Matuail landfill expansion is disbursed by the Government of Bangladesh without any delay. 4. Amin Bazar landfill construction project is approved by the Government of Bangladesh without delay. 5. Staff whose capacity has been developed in the Project and the Development Study is properly assigned. 6. DCC transfers staff to WMD and employs new staff appropriately without delay. 7. DCC allocates appropriate budget to conduct the Project activities. 8. DCC transfers relevant assets to WMD properly without delay. 9. DCC prepares enough offices for WMD appropriately without delay. **Pre-conditions** 1. Waste Management Department is approved by the Government of Bangladesh. 2. Project concept, and roles and responsibilities of project stakeholders is shared and clearly understood among them.

4－4	To evaluate landfill operation improvement		
5－1	To develop financial reports		
5－2	To prepare proposal of financial plans		
5－3	To improve procurement and payment processes		

<<Note>>

1) For the activities accompanied with "(by DCC)" as well as for activities that are added in the PDM workshop and subsequent group meeting, strong initiative, including budget allocation, will be taken by DCC.

(Abbreviation) DCC (Dhaka City Corporation), SWM (Solid Waste Management), WMD (Waste Management Department)

*1 This activity includes parts of Ward-based Approach 1 (Construction/renovation of ward SWM offices and strengthening if their functions)

*2 This activity includes parts of Ward-based Approach 2 (Provision of safety gears and workers' manual to improve working environment)

*3 This activity includes parts of Ward-based Approach 3 (Promotion of participatory SWM)

*4 This activity includes parts of Ward-based Approach 4 (Introduction of new collection system/Improvement of existing collection system)

Appendix 2 Records of Implementation Schedule (Annual Activity Plans of 1st to 5th JFY (Fiscal Year of Japan) with Actual Results)

1st and 2nd JFY

Group1

Item	Activity	Status	Result	Person in charge		2007												2008					
				DCC	Expert	First Year						Second Year											
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	
1	**Project management and coordination are in place**																						
1-1	Establish Waste Management Department (WMD)	Plan	* WMD is approved by the central government as proposed. * Appropriate personnel is assigned to approved posts.	CEO, CCO	Hara																		
		Actual	WMD is not yet approved. Staffing to WMD is not yet started.	CEO,Secretary, CCO	Hara																		
1-2	Hold monthly meeting among counterpart personnel of WMD, Japanese Experts and concerned personnel in other departments (project team meeting)	Plan	* Project Team meetings are held once in a month and when necessary. * Monitoring results of all groups are discussed. * Good practices are summarised for dissemination. * Necessary countermeasures are discussed to solve problems.	CCO, PD	Hara, Riad																		
		Actual	Project Team meetings were held almost once a month.	CCO, PD	Hara, Riad																		
1-3	Compile annual activity plans related to SWM issues	Plan	* Annual Plans of Activities of all groups are checked and coordinated.	CCO, PD	Hara																		
		Actual	As planed	CCO, PD	Hara																		
1-4	Advocate necessary actions to Policy Makers, related Government organizations, city dwellers, etc.	Plan	* Necessary (two) policies, recommendations, rules, standards, or guidelines are advocated in a year. * Advocated policies, recommendations, standards by-laws, regulations, or guidelines are adopted.	PD	Hara, Riad																		
		Actual	None	None	None																		
1-5	Compile good practices and lessons from the Project activities	Plan	* Leaflets or articles at the web sites to introduce and disseminate more than two good practices are issued and distributed.	PD	Hara, Riad																		
		Actual	Not yet started	None	None																		
1-6	Promote public relations activities such as publication of newsletters and development of web pages	Plan	* Newsletters are issued and distributed twice a year. * Web site articles are added or reviewed four times a year.	PD, Assadzaman	Hara, Riad																		
		Actual	As planed	PD, Assadzaman	Hara, Riad, Takeuchi																		

Item	Activity	Status	Result	Person in charge		2007						2008											
				DCC	Expert	First Year						Second Year											
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	
1-7	Hold seminars/workshops with related DCC staff/Ministries/R&D organizations/Donors/other Cities, etc	Plan	* Seminars/workshops are held once a year. * Bangladesh SWM Conferences are held in other cities once a year.	PD	Hara, Riad							→	→	→	→	→	→	→	→	→	→	→	→
		Actual	Woos/og on PDM, WMD lunch Event Project Progress Workshop, 2nd BSWM Conference	PD	Hara, Riad				→			→						→	→			
1-8	Develop by-laws, regulations, guidelines (if needed)	Plan	* By-laws, regulations or guidelines are proposed to decision-makers, when necessary.	CCO, PD	Hara, Riad							→	→	→	→	→	→	→	→	→	→	→	→
		Actual	None	None	None																		
1-9	Review and modify Clean Dhaka Master Plan	Plan	* Necessary parts of Clean Dhaka Master Plan is reviewed/modified to be suitable to the current conditions.	CCO, PD	Hara, Riad																		
		Actual	None	None	None																		
1-10	Conduct Questionnaire Surveys with Beneficiaries of SWM Services	Plan	* Reliable information with around 50 samples in a target Ward on saticefaction of residents is obtained. * Reasons for non-satisfaction are indentified.	PD	Hara, Okamonto (design)							→									→		
		Actual	As planed	PD	Okamonto (design), Takeuchi							→									→		
1-11	Conduct Training in Third Countries	Plan	* Participants (around 5) get knowledge and information to implement project activities. * Participants (around 5) get connections for information exchange for improvement of SWM services.	CCO, PD	Hara																		
		Actual	None	CCO, PD	Hara, Takeuchi																		
1-12	Convene Steering Committee	Plan	* Inception Reports and Progress reports are accepted by the Steering Committee. * Annual activitiy plans of all of the five groups are approved by the Steering Committee.	CEO, CCO, PD	Hara				→										→				
		Actual	As planed	CEO, CCO, Dr.	Hara				→										→				

Group 2

Item	Activity	Status	Result	Person in charge		2007										2008					
				DCC	Expert	First Year					Second Year										
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
2	**Participatory solid waste management program is promoted**																					
2-0	**Common Activities**																					
2-0-1	Review previous project activities	Plan	Success factors and failure factors are identified through discussion among counterparts and meeting with Ward SWM Committee of ward 6 and 65	Asad	Okamoto				→													
		Actual	Internal discussions completed. Discussion with WSWM organizations to be done	Asad	Okamoto		→					→										
2-0-2	Develop guideline for WSWM	Plan	Draft Guideline is developed including the process methods of three activity areas and other cross connecting issues by June	Assad, Shafik, Motalib	Okamoto				→	→												
		Actual	Draft Guideline prepared and discussed with leaders of Ward 6 and 65 and NGOs	Assad, Shafik, Motalib	Okamoto	→	→	→				→	→	→	→	→	→	→	→			
2-0-3	Seminar for presentation of draft WSWM Guideline	Plan	Seminar is held with the presence of DCC officials, NGO professional, JICA official and resource persons. Comments are clarified and incorporated in the draft guideline in the middle of august		Okamoto						→	→										
		Actual	Seminar done and strategies modified based on results. Operational aspects need to be discussed.		Okamoto							→										
2-0-4	Approve WSWM Guideline by Mayor's order or by Chief Executive Officer	Plan	Guideline is approved incorporating the comments of resources person, NGO professionals and DCC officials by September 2007	Shah Alam,	Okamoto							→	→									
		Actual	Guideline is officially submitted to CEO for Approval	Shah Alam	Okamoto														→			
2-0-5	Publication and distribution of guideline	Plan	Published guideline, 100 copies are distributed to the targeted stakeholders (C/P, WSWM Committees, Commissioner, COs and CSIs, etc.)	Shah Alam	Okamoto									→								
		Actual	Around 60 copies of draft Guideline are printed and distributed to counterparts, Ward SWM Committees of Ward 6 and 65, rest of which will be distributed soon to the counterpart for assessments and comments	Shah Alam	Okamoto									→								
2-0-6	Formulate separate strategies for strengthening community SWM, for supporting primary collection service providers and for public awareness raising	Plan	Strategies are set for Community SWM, PC and PA	Asad, Shafik, Motalib	Okamoto				→	→												
		Actual	Major strategies identified in IC/R. Document shall be prepared	Asad, Shafik, Motalib	Okamoto			→		→												
2-0-7	Make annual activity plan	Plan	Quarterly Activity Plan (weekly break down) is made with location of work, responsible persons etc.	Motalib, Shafik and Asad	Okamoto					→												
		Actual	Quarterly plans will be prepared	Motalib, Shafik and Asad	Okamoto				→													

Item	Activity	Status	Result	Person in charge		2007												2008					
				DCC	Expert	First Year						Second Year											
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	
2-0-8	Assess overall participatory SWM activities	Plan	Success factors and failure factors are identified through discussion among counterparts and meeting with Ward SWM Committee of ward7 6 and 36 and from monitoring report of Cis	Shah Alam	Okamoto																	→	
		Actual	Assessment was made at the end of the year	Shah Alam	Okamoto																	→	
2-0-9	Review and Modify WSWM Guideline	Plan	Utility of WSWM guidelines are justified, Time and work specific issues(if any) are considered and revised	Shah Alam	Okamoto																		
		Actual	Not implemented	Shah Alam	Okamoto																		
2-1	**Establish Ward SWM Organization**																						
2-1-1	Survey of Local Organization and Association (36 and 76)	Plan	Existing social organizations are identified by baseline survey	Motalib Shafik	Okamoto				36							76							
		Actual	Survey completed in Ward 36 and 76	Motalib Shafik	Okamoto		→					36 →		76 →									
2-1-2	Organize and conduct Kick off meeting (36 done 76 need to be done)	Plan	Ward key persons and some of residents are informed about WSWM	Motalib	Okamoto					36 →							76 →						
		Actual	Kickoff meetings have been implemented	Motalib	Okamoto								36 →		76 →								
2-1-3	Communication with local organization and nomination of member for CUWG (14 meeting)	Plan	Probable Nominee or Applicants for CUWGs are found	Motalib	Okamoto					36 →							76 →						
		Actual	6 meetings were conducted for Ward 36 and 7 meetings in Ward 76	Motalib	Okamoto							→						→					
2-1-4	Organization of CUWGs involving male and female and selection of representative for WSWM Committee (7 units), (7 general meeting) (2 wards)	Plan	14 community units in 2 wards are organized and motivation is done to work voluntary basis	Motalib	Okamoto						36 →							76 →					
		Actual	Unit 3 done in ward 36 and ward 76, other units are in progress	Motalib	Okamoto							→				→							
2-1-5	Organization of Ward SWM Committee (Election/selection) Explanation, Issue and Receive Application form	Plan	2 Ward SWM Committee in ward 36 and 76 are organized and prepared to take initiative by themselves for community SWM activities	Motalib	Okamoto						36 →							76 →					
		Actual	It is difficult to set up 2 Ward SWM Committee	Motalib	Okamoto																		
2-1-6	Registration/Authentication/authorization of Ward SWM Committee by DCC	Plan	DCC approved/authorized 2 WSWM Committees of ward 76 and 36	Shah Alam	Okamoto							36 →							76 →				
		Actual	It was difficult to set up 2 Ward SWM Committee	Shah Alam	Okamoto																		

Item	Activity	Status	Result	Person in charge		2007												2008					
				DCC	Expert	First Year					Second Year												
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
2-2	**Support Ward SWM organizations**																						
2-2-1	Preparation of Training material, Training Design, and/or preparation of TOR for training and contract with training institute for WSWM organizations	Plan	Training manual and design is developed	Asad, Shafik, Motalib	Okamoto							→										
		Actual	Concept and draft outline was developed	Asad, Shafik, Motalib	Okamoto								→										→
2-2-2	Conduction of training of Ward SWM Committee and community unit working group of ward 36 ad 76	Plan	40 WSWMC members and 100 CUWG members of 2 wards are trained	Asad Shafik Motalib	Okamoto								→ 36				→ 76						
		Actual	Not implemented.	Asad Shafik	Okamoto																		
2-2-3	Monitoring of training program and evaluation	Plan	Process of training and result of training are assessed	Motalib	Okamoto								→ 36				→ 76						
		Actual	Not implemented.	Motalib	Okamoto																		
2-2-4	CUWG Survey, Mapping, problem analysis and Action Plan	Plan	Community Unit Action Plan is made	Motalib, Shafik, Asad, Shah Alam	Okamoto								→ 36				→ 76			→		→	
		Actual	It was difficult to set up 2 Ward SWM Committee	Motalib, Shafik, Asad, Shah Alam	Okamoto																		
2-2-5	Ward SWM Committee Shear CU Action Plans, Support to Make WSWM Action Plan and Implementation	Plan	Ward SWM Plan for 36 and 76 are made	Motalib, Shafik, Asad, Shah Alam	Okamoto									→ 36				→ 76					
		Actual	It was difficult to set up 2 Ward SWM Committee	Motalib, Shafik, Asad, Shah Alam	Okamoto																		
2-2-6	Monitor community SWM activities by the Community Cell of WMD involving Conservancy Inspectors	Plan	Problems and progress of Community SWM are identified	Shafik, Motalib, Asad, Shah Alam	Okamoto																		
		Actual	Not implemented.	Shafik, Motalib, Asad, Shah Alam	Okamoto																		
2-2-7	Development of partnership with NGOs/CBOs/volunteers for facilitating the process of ward SWM establishment (contact and start	Plan	Probable NGO/CBO/Volunteers are identified and TOR is made. Contents of MOU are point out.	Shah Alam	Okamoto																		
		Actual	Not implemented.	Shah Alam	Okamoto																		
2-2-8	Establish and execute DCC's primary collection registration system (develop format for application and appraisal criteria)	Plan	Development of procedure of PCSP permission and execution is done in two wards (36&76)	Shafik, Motalib, Asad, Shah Alam	Okamoto									→ 36				→ 76					
		Actual	It was difficult because of political matters	Shafik, Motalib, Asad, Shah Alam	Okamoto																		
2-2-9	Develop and manage database of primary collection information	Plan	Data base of all PCSPs of ward 36 and 76 are made and maintained	Shafik, Motalib, Asad, Shah Alam	Okamoto									→ 36				→ 76					
		Actual	It was difficult because of political matters	Shafik, Motalib, Asad, Shah Alam	Okamoto																		
2-2-10	Develop system of monitoring primary collection service providers registered by DCC for ward 36 and 76	Plan	Monitoring parameters, tools and techniques are made	Shafik, Motalib, Asad, Shah Alam	Okamoto										→								
		Actual	It was difficult because of political matters	Shafik, Motalib, Asad, Shah Alam	Okamoto																		

Item	Activity	Status	Result	Person in charge		2007												2008					
				DCC	Expert	First Year					Second Year												
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
2-2-11	Conduct training programs for primary collection service providers (explanation of WSWM and permission system)	Plan	All PCSP of ward 36&76 are trained (staff, collect0rs and managers)	Shafik, Motalib, Asad, Shah Alam	Okamoto										36 →			76 →					
		Actual	It was difficult because of political matters	Not done	Okamoto																		
2-2-12	Support PCSPs to improve collection services (expand the coverage areas, coordination with micro credit organizations, provision of equipment, etc. for ward 36 and 76)	Plan	Supports are ensured based on demand and service is improved	Shafik, Motalib, Asad, Shah Alam	Okamoto											→	→	→	→	→	→	→	→
		Actual	Ward 36: Actions to improve PCSPswere included in CAP Ward 76: Improvement of PCSPs were conducted through PP3	Joint meeting was held	Okamoto												→	→					
2-2-13	Evaluation of previous equipment (interview of PCSP and local people)	Plan	Efficient, user-friendly and environment friendly equipments are developed	Shafik, Motalib, Asad, Shah Alam	Okamoto									→									
		Actual	New Rickshaw van was introduced through PP3	Equipments were evaluated in terms of	Okamoto													→					
2-3	**Organize awareness raising programs (Dhaka city based)**																						
2-3-1	Clean Dhaka Ward Contest (every year)	Plan	Best scoring wards are awarded and midia coverage is made with the particiation of 90 wards commissioner, 10 zones executive officers and field visits	Asad	Okamoto												→	→	→				
		Actual	Implemeted as scheduled but not involving Ward Commissioners	Asad,	Okamoto												→	→	→				
2-3-2	Essay competition (every year)	Plan	School College and University Student participated , media coverage are made through national news papers	Asad	Okamoto																→	→	→
		Actual	Not implemented	Asad,	Okamoto																		
2-3-3	Sticker campaign (4 times a year)	Plan	15000, Stickers are pasted in CNG, Rickshaw and Buses, Taxis 4times	Asad	Okamoto										1st	2nd			3rd				4th
		Actual	Sticker campaigns have been conducted 2 times	Asad,	Okamoto								→					→					
2-3-4	Bill board set-up	Plan	Effectiveness of two bill boards setup in different public places are identified	Asad	Okamoto												→				→		
		Actual	Billboards on general public awareness have been installed since November 2007	Asad,	Okamoto											→	→	→	→	→	→	→	→
2-3-5	Children Conference (including cultural program)	Plan	Children from mobile and model school is participated day long conference program and enjoyed the environmental eduation and cultral program, games etc.		Okamoto																→		
		Actual	Not implemented		Okamoto																		

Item	Activity	Status	Result	Person in charge		2007											2008					
				DCC	Expert	First Year					Second Year											
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
2-4	**Develop and Distribution of awareness raising promotional materials (news letter, calendar, DVD, Poster, Leaflet, sticker etc.)**																					
2-4-1	leaflet	Plan	10000, Leaflets are made and distributed, Responses are identified	Asad	Okamoto								→									
		Actual	15,000 leaflets have been developed	Asad,	Okamoto								→									→
2-4-2	Calendar	Plan	2000 Calendars are made and distributed, Responses are identified	Asad	Okamoto									→								
		Actual	2,000 copies printed and distributed	Asad,	Okamoto								→									
2-4-3	Disseminate of information of offences and penalties provided in DCC ordinance for throwing/placing waste through media and other different means	Plan	Target groups are become careful about DCC ordinance regarding waste management offences and penalties	Asad,	Okamoto										→							
		Actual	Not implemented	Asad,	Okamoto																	
2-4-4	Conduct School Environmental Education Program	Plan	Behavioral Change in the School Children are occurred, Model School is developed and popularized.	Asad,	Okamoto												36→		76→			
		Actual	Mobile schools and Model schools are being implemented	Asad,	Okamoto		———	———	———	———	———	———	———	———	———	———	———	———				
2-4-5	Regular communication with Ward SWM committee and CUWG to solve the problems according to the requests from Ward SWM committees and monitoring report submitted by Conservancy inspector	Plan	Continuous support from DCC are in place to the community requests	Shafik, Motalib, Asad, Shah Alam	Okamoto										———	———	———	———	———	———	———	→
		Actual	Though regular communication with targeted stakeholders could not be made there were frequent discussion among stakhoders as cooridniation meeting	Shafik, Motalib, Asad, Shah Alam	Okamoto																	

Item	Activity	Status	Result	Person in charge		2007											2008					
				DCC	Expert	First Year					Second Year											
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
2-4-6	Organize coordination meeting among DCC, Ward SWM committee, and primary collection service provider	Plan	More than 80% participants are present in the meeting, problems are sheared with DCC, CUWG & PCSP requests are considered	Shafik, Motalib, Asad, Shah Alam	Okamoto											36			36 &7 6			36 &7 6
		Actual	Coordination meeting was held moang the stakeholders	Shafik, Motalib, Asad, Shah Alam	Okamoto																	
2-4-7	Coordinate with related organizations to improve the scattering waste around containers and dustbins	Plan	Containers' surrounding area are free from scattering waste, recyclable sorting (not always) and uncontrolled leach ate flow	Shafik, Motalib, Asad, Shah Alam	Okamoto																	
		Actual	Discussion with waste pickers and realted stakeholders have been made but conconcrete activities were not sorted out	Shafik, Motalib, Asad, Shah Alam	Okamoto																	
2-5	**Capacity Development of Counterpart through on the job training, study tours, lectures, workshops**																					
2-5-1	Training need assessment	Plan	Training requirements are identified based on discussion and assessment if skill deficiency	Asad Shafik Motalib	Okamoto																	
		Actual	Training needs assessed and requirements set as per priority	Asad Shafik Motalib	Okamoto																	
2-5-2	Basic Computer Education and Documentation	Plan	Counterparts have good hand on application package software	Asad	Okamoto																	
		Actual	To be held in the following year	Asad	Okamoto																	
2-5-3	Training on Project Cycle Management (Planning, Monitoring and Evaluation)	Plan	Counterpart understand the knowledge of method to control project and its component. (PDM, LOG frame, Project cycle Management)	Asad, Shafik, Motalib,	Okamoto																	
		Actual	Touched upon in PRA training but to be done later in more detail	Asad, Shafik, Motalib,	Okamoto																	
2-5-4	Reporting and Presentation	Plan	Counterparts have good skill on report making and presentation by having practical exercising	Asad, Shafik, Motalib,	Okamoto																	
		Actual	PRA Training has been implemented	Asad, Shafik, Motalib,	Okamoto																	

Group 3

Item	Activity	Status	Result	Person in charge		2007												2008					
				DCC	Expert	First Year					Second Year												
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
3-1	Formulat an Annual Plan of Activities for Secondary Collection and Transportation	Plan	This activity will help DCC to run waste collection and transportation work in a more planned way	Abul Hasnat Md. Ashraful Alam, Sufi Ullah Siddik Bhuiyan, Maksud Alam, Rajib Khadem	Riad, Takasugi				◆													
		Actual	Annual plan is planed.	Abul Hasnat Md. Ashraful Alam, Sufi Ullah Siddik Bhuiyan, Maksud Alam, Rajib Khadem	Riad, Takasu						◆											
3-2	Analyze Weighbridge data at Matuail and Aminbazar landfill sites	Plan	Data from one year will help DCC for analysing vehicle performance and future vehicle procurement plan	Abul Hasnat Md. Ashraful Alam, Sufi Ullah Siddik Bhuiyan, Mahbubul Alam, Siddiqur Rahman, Golam Marshed	Ishii, Riad, Takasugi							→	→	→	→	→	→	→	→	→	→	→
		Actual	Weih bridge are not installed,however eye measurement id dine.	Abul Hasnat Md. Ashraful Alam, Sufi Ullah Siddik Bhuiyan, Mahbubul Alam, Siddiqur Rahman, Golam Marshed	Ishii, Riad, Takasugi							→	→	→	→	→	→	→	→	→	→	→
3-3	Identify every secondary collection route and its efficiency by route monitoring and employing data collection and analysis systems (MIS, GIS)	Plan	DCC can identify problem routes and confirm routes and secondary stations and plot on maps	Rajib Khadem, Sufi Ullah Siddik Bhuiyan, Kazi Hasiba Jahan, Ekramul Haq, Mamun Uddin Ahmed	Ishii, Riad, Takasugi								→	→	→	→						
		Actual	Several routes analysis is done.	Rajib Khadem, Sufi Ullah Siddik Bhuiyan, Kazi Hasiba Jahan, Ekramul Haq, Mamun Uddin Ahmed	Ishii, Riad, Takasugi								→	→	→	→						
3-4	Optimize and re-organize routes to embrace problematic and, or inefficient routes	Plan	After one year DCC can set priorities and implement route improvements	Abul Hasnat Md. Ashraful Alam, Sufi Ullah Siddik Bhuiyan, Rajib Khadem,Golam Marshed	Ishii, Riad											→	→	→	→			
		Actual	Several routes tried.	Abul Hasnat Md. Ashraful Alam, Sufi Ullah Siddik Bhuiyan, Rajib Khadem,Golam Marshed	Ishii, Riad											→	→	→	→			
3-5	Select suitable/ appropriately designed vehicles and collection system (review the M/P as necessary)	Plan	DCC will be able to propose suitable truck types and collection systems by analysing the data from one year	Abul Hasnat Md. Ashraful Alam, Sufi Ullah Siddik Bhuiyan, Rajib Khadem, Golam Marshed, Ekramul Haq	Ishii, Takasugi, Riad,											→	→	→	→			
		Actual	Done.	Abul Hasnat Md. Ashraful Alam, Sufi Ullah Siddik Bhuiyan, Rajib Khadem, Golam Marshed, Ekramul Haq	Ishii, Takasugi, Riad,											→	→	→	→			

Item	Activity	Status	Result	Person in charge		2007												2008					
				DCC	Expert	First Year					Second Year												
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
3-6	Preparation for Procurement of Vehicles and Containers (by DCC)	Plan	After one year DCC will know the actual design of containers and locations of those	Abul Hasnat Md. Ashraful Alam, Sufi Ullah Siddik Bhuiyan, Maksud Alam, Rakib Ahmed	Takasugi, Riad, Ishii																		
		Actual	DCC tried but not yet done.	Abul Hasnat Md. Ashraful Alam, Sufi Ullah Siddik Bhuiyan, Maksud Alam, Rakib Ahmed	Takasugi, Riad, Ishii																		
3-7	Conduct detailed analysis of equipment (mobile/ stationary) maintenance and repair management	Plan	DCC can get a clear idea of requirements of workshop improvement	Maksud Alam, Md. Nuruzzaman ,Eqramul haq, Habib Mohammed Al-Ahsan	Takasugi, Riad																		
		Actual	Done.	Maksud Alam, Md. Nuruzzaman ,Eqramul haq, Habib Mohammed Al-Ahsan	Takasugi, Riad																		
3-8	Prepare improving of workshop facilities and equipment (by DCC)	Plan	Workshop will serve in improved way	Maksud Alam, Md.Nuruzzaman, Eqramul haq, Siddiqur Rahman	Takasugi, Riad																		
		Actual	Planed.	Maksud Alam, Md.Nuruzzaman, Eqramul haq, Siddiqur Rahman	Takasugi, Riad																		
3-9	Train Mechanics, drivers and others	Plan	Trained drivers, mechanics and Conservancy Inspectors will work better than present	Abul Hasnat Md. Ashraful Alam	Ishii, Takasugi, Riad,																		
		Actual	Training is done two times.	Abul Hasnat Md. Ashraful Alam	Ishii, Takasugi, Riad,																		
3-10	Coordinate inter-departmental activities	Plan	Smooth operations will be conducted	Abul Hasnat Md. Ashraful Alam, Maksud Alam, Aminur Rahman Biswas	Riad, Ishii, Takasugi																		
		Actual	Tried continuously.	Abul Hasnat Md. Ashraful Alam, Maksud Alam, Aminur Rahman Biswas	Riad, Ishii, Takasugi																		

Abriviations : MG= Management Group; CD= Conservancy Department; TD= Transport Department; UP= Urban Planning; ED= Engineering Department

Group 4

Item	Activity	Status	Result	Person in charge		2007												2008					
				DCC	Expert	First Year					Second Year												
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
4-1	Formulate Annual Plans of Activities for operation and management of final disposal sites	Plan	Annual operation plan	PD	Abe			→	→								→	→	→			
		Actual	Annual operation plan	PD	Abe			→	→													
4-2	Continue facility construction and operation at Existing Matuail Landfill (by DCC)	Plan	Construction as per design drawing	Mr.Mahabub Mr.Harun	Saito	→	→	→	→	→												
			Operation as per O/M			···	···	···	···	···	→	→	→	→	→	→	→	→	→	→	→	→
		Actual	Construction as per design drawing	Mr.Mahabub Mr.Harun	Saito	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
			Operation as per O/M								→	→	→	→	→	→	→	→	→	→	→	→
4-3	Functional Set-up of manpower (by DCC)	Plan	Tentative LMU	PD	Saito				→	→	→	→											
		Actual	Tentative LMU	PD	Saito				→	→	→	→											
4-4	Assess the changes/improvement of disposal sites by regulatory bodies (by DCC)	Plan	Evaluation committee	PD	Abe				→									→				
			Evaluation report	PD	Abe							→						→				
		Actual	not implemented	PD	Abe																	
4-5	Prepare budget for O&M of Matuail Landfill (by DCC)	Plan	Budget proposal, Actual budget of DCC	Mr.Mahabub	Saito			→	→	→										→	→	→
		Actual	Budget proposal, Actual budget of DCC	Mr.Mahabub	Saito			→	→	→										→	→	→
4-6	Conduct on the job training on operation and maintenance of existing Matuail landfill for WMD counterpart personnel	Plan	Training report, Upgrade skills	PD	Saito				···	···	→	→	→	→	→	→	→	→	→	→	→	→
		Actual	Upgrade skills	PD	Saito						→	→	→	→	→	→	→	→	→	→	→	→
4-7	Recommend/Advocate for incentives for landfill personnel (e.g. health insurance)	Plan	Proposed to DCC	PD	Saito						→	→	→	→	→	→	→	→	→	→	→	→
		Actual	not implemented	PD	Saito																	
4-8	Improve working condition of waste pickers (livelihood security) (by DCC)	Plan	Invite NGO proposal, Tender and Evaluation	PD	Abe						→	→	→					→	→	→			
		Actual	not implemented	PD	Abe																		

Item	Activity	Status	Result	Person in charge		2006/2007 First Year					2007/2008 Second Year										
				DCC	Expert	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
4-9	Sensitize DCC policy makers (e.g. on importance and budget requirement)	Plan	Workshop, Seminer	PD	Saito							→						→				
		Actual	Seminer	PD	Saito													→				
4-10	Prepare Operational Manual	Plan	OM for the staff of LMU to be easyly used, Periodical revise	Mr.Mahabub Mr.Rajib	Saito			→	→	→												
		Actual	not implemented	Mr.Mahabub Mr.Rajib	Saito																	
4-11	Estimate requirements/ request for requisite landfill equipment	Plan	Plan of required landfill equipments	Mr.Mahabub Mr.Harun	Saito				→	→										→	→	→
		Actual	Plan of required landfill equipments	Mr.Mahabub Mr.Harun	Saito				→	→										→	→	→
4-12	Conduct Environment Monitoring for operation and maintenance in existing Matuail landfill	Plan	Monitoring as per EMP and O/M	PD Mr.Rajib	Abe			⇢	⇢	→										→	→	→
		Actual	Measure LF gas, leachate quality and Surface water quality by using the simple measuring instruments	PD Mr.Rajib	Saito								→	→	→	→	→	→	→	→	→	→
4-13	Formulate and submit Environment Management Plan for Matuail landfill expansion to DOE (by DCC)	Plan	EIA and EMP, Environment certificate	PD Mr.Rajib	Abe	→	→	→	→	→												
		Actual	not implemented	PD Mr.Rajib	Abe																	
4-14	Construct Mautail Landfill Expansion (by DCC)	Plan	Construction as per design drawing	Mr.Mahabub Mr.Harun	Saito	→	→	→	→	→	→	→	→	→	→	→						
		Actual	Construction as per design drawing	Mr.Mahabub Mr.Harun	Saito	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
4-15	Facilitate DOE to prepare landfill standards	Plan	Tentative Landfill Standard, Workshop on LF	PD	Abe					→												→
		Actual	Tentative Landfill Standard	PD	Saito					→												→

Item	Activity	Status	Result	Person in charge		2006/2007					2007/2008										
				DCC	Expert	First Year					Second Year										
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
4-16	Conduct administrative and functional control of the concerned staff	Plan	Attendance record	PD/Admi.	Saito						→	→	→	→	→	→	→	→	→	→	→	→
		Actual	Attendance record	PD/Admi.	Saito						→	→	→	→	→	→	→	→	→	→	→	→
4-17	Formulate and submit Environment Impact Assessment for Amin Bazar new landfill to DOE (by DCC)	Plan	EIA and EMP, Environment certificate	PD Mr.Rajib	Abe	→	→	→	→	→	→	→										
		Actual	not implemented	PD Mr.Rajib	Abe																	
4-18	Secure necessary budget and construct Amin Basar new landfill (by DCC)	Plan	DPP Approval	PD Mr.Harun	Saito	→	→	→	→	→												
			Construction as per design drawing	PD Mr.Harun	Saito									→	→	→	→	→	→	→	→	→
		Actual	not implemented																			
4-19	Conduct on the job training on operation and maintenance of Amin Bazar landfill for WMD counter personnel	Plan	not implemented																			
		Actual	not implemented																			
4-20	Conduct Environment Monitoring for operation and maintenance of Amin Bazar new landfill	Plan	not implemented																			
		Actual	not implemented																			
4-21	Examine Outsourcing of Landfill O&M	Plan	not implemented																			
		Actual	not implemented																			
4-22	Set-up Environmental site laboratory (by DCC)	Plan	Site lab set-up, Monitoring Report	Mr.Towhid Mr.Rajib	Saito					→	→											
		Actual	Site lab set-up, Monitoring Report	Mr.Farid Mr.Rajib	Saito					→	→											

Group 5

Item	Activity	Status	Result	Person in charge		2007											2008					
				DCC	Expert	First Year					Second Year											
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
5-1	Establish organizational set-up to ensure the following:	Plan	Organizational structure of financial working group is set up to carry out the project.	Belal Hossain	Osakabe				→	→												
		Actual	Organizational structure of financial working group was set up to carry out the project.	Belal Hossain	Osakabe				→													
5-2	Deployment of proper human resource	Plan	A full-time suitable staff is deployed..	Belal Hossain	Osakabe				→													
		Actual	A full-time suitable staff is deployed..	Belal Hossain	Osakabe				→													
5-3	Standard software and necessary equipment	Plan	New financial management software is studied and introduced.	Mizanur Rahman	Osakabe				→				→			→						
		Actual	New financial management software was studied and introduced.	Mizanur Rahman	Osakabe				→				→			→						
5-4	Related departments follow a standarized Accounting System	Plan	Standardized accounting system is understood and utilized.	Afzalul Azam Reza Mizanur Rahman	Osakabe												→	→	→	→	→	→
		Actual	Training and practice of new software was conducted.	Afzalul Azam Reza Mizanur Rahman	Osakabe											→	→	→	→			
5-5	Conduct orientation program of accounting system for concerned staff members	Plan	Orientation is carried out in the beginning of FY.	Afzalul Azam Reza Mizanur Rahman	Osakabe						→											
		Actual	Orientation was carried out in September for all related Departments.	Afzalul Azam Reza Mizanur Rahman	Osakabe								→									
5-6	Regular monitoring for smooth data collection	Plan	Monitoring is made in every 3 months.	Afzalul Azam Reza Mizanur Rahman	Osakabe				→			→			→			→			→	
		Actual	Monitoring has been made in every months.	Afzalul Azam Reza Mizanur Rahman	Osakabe				→			→	→	→	→	→	→	→	→			
5-7	Collect actual cost data and actual revenue data (periodically/monthly)	Plan	Necessary data is submitted to WMD by the related department reguraly.	Mizanur Rahman (Rokeya Akter)	Osakabe	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
		Actual	Necessary data is submitted to WMD by most related departments reguraly	Mizanur Rahman (Rokeya Akter)	Osakabe	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→

Item	Activity	Status	Result	Person in charge		2007										2008					
				DCC	Expert	First Year					Second Year										
						2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
5-8	Input data and output annual budget and monthly actual cost	Plan	Input and output operation is carried out correctly.	Mizanur Rahman (Rokeya Akter)	Osakabe																	
		Actual	Input and output operation of actual is carried out correctly.	Mizanur Rahman (Rokeya Akter)	Osakabe																	
5-9	Prepare annual plans of activities	Plan	Annual plan of 2008/09 is prepared.	Afzalul Azam Reza	Osakabe																	
		Actual	Strategy of WMD must be designed together with G1.	Afzalul Azam Reza	Osakabe																	
5-10	Develop a financial report	Plan	Adequate financial report is designed.	Mizanur Rahman	Osakabe																	
		Actual	Design is carried out after training and practice of new software.	Mizanur Rahman	Osakabe																	
5-11	Formulate a financial plan	Plan	Financial plan of 2008/09 is formulated.	Mizanur Rahman	Osakabe																	
		Actual	WMD formulated the financial plan of FY2010/11 for the first time by applying new budgeting system.	Mizanur Rahman	Osakabe																	
5-12	Develop a strategy for increasing revenue for SWM	Plan	-	Belal Hossain Afzalul Azam Reza Mizanur Rahman	Osakabe																	
		Actual		Belal Hossain Afzalul Azam Reza Mizanur Rahman	Osakabe																	
5-13	Analyze the data	Plan	-	Mizanur Rahman	Osakabe																	
		Actual		Mizanur Rahman	Osakabe																	
5-14	Evaluation and Feedback	Plan	-	Belal Hossain Afzalul Azam Reza Mizanur Rahman	Osakabe																	
		Actual		Belal Hossain Afzalul Azam Reza Mizanur Rahman	Osakabe																	

3rd JFY
Group 1

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009										
				DCC	Expert	3 JFY											4 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1-1	To establish Waste Management Department (by DCC)	Plan	- WMD is approved by the centrral government as proposed - Appropriate personnel is assigned to approved posts	CEO, CWMO	Hara														
		Actual	Ministry of Finance approved the WMD but there are some reservations concerning salary scales and posts and DCC has requested LGRD to petion Ministry of Finance	CEO, CWMO	Hara														
1-2	To strengthen human resources and institution of Waste Management Department																		
1-2-1	Develop by-laws, regulations, guidelines (if needed)	Plan	By-laws, regulations, guidelines are proposed to decision makers when necessary	CWMO, SE	Hara, Riad														
		Actual	Technical guidelines were developed for the landfill and collection of waste in Outputs 4 and 3 respectively. These may be promoted for use in preparing the national standards	CWMO, PD	Hara, Riad														
1-2-2	Conduct training in third countries	Plan	- Participants (around 5) get knowledge/ information to implement project activities - Participants (around 5) get connections for SWM information exchange	CWMO, SE	Hara														
		Actual	Hanoi Study Tour satisfactorly completed	CWMO, SE	Hara														
1-2-3	Establish ward SWM offices and strengthen office function	Plan	- Ward offices are to be constructed or renovated - Functions of ward offices are to be strenghened	CWMO, SE	Hara														
		Actual	Four offices (33, 44, 45, and 58) renovated and three offices (63, 69, 75) constructed. Recording format prepared for each office. Recording completed up to December. WOOA organized for improving the ward SWM office function.	CWMO	Hara														
1-2-4	Provide safety gears and workers manual to improve working conditions	Plan	- Safety gears are to be distributed - Workers working environment to be mporved	CWMO, SE	Hara														
		Actual	Safety gears and manuals were distributed to workers in 15 wards	CWMO, Add. CWMO	Hara														

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009												
				DCC	Expert	3 JFY												4 JFY			
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	
1-3	To prepare Annual Activity Plans	Plan	Annual plans of activities of all groups are checked and coordinated	CWMO, SE	Hara											▶					
		Actual	The annual activity plans for 4th JFY have been prepared by each Output.	CWMO, Add. CWMO, PD, EE	Hara											→					
1-4	To coordinate Project activities																				
1-4-1	Hold monthly Project Meetings among counterpart personnel of WMD, Japanese experts anc concerned personnel in other departments (Project Team Meeting)	Plan	- Project Team meetings are held once in a month and when necessary - Monitoring results of all groups are discussed - Good practices are summarized for dissemination - Necessary countermeasures are discussed to solve problems	CWMO, SE	Hara, Riad	⇢	⇢	⇢	⇢	⇢	⇢	⇢	⇢	⇢	⇢	⇢	⇢		⇢	⇢	
		Actual	Project monthly meetings held in June, July, August, September, October, December, January and February	CWMO, PD	Hara, Riad			→	→	→	→		→	→	→	→					
1-4-2	Conduct questionnaire surveys with beneficiaries of SWM service	Plan	- Reliable information with around 50 samples in a target ward on satisfaction of residents is obtained - Reasons for non-satisfaction are identified	PD	Hara, Okamoto, Takeuchi		→									→			→		
		Actual	Public awareness survey, Cycle 2 baseline for WBA full-menu wards (44, 63, 69 and 75) and Cycle 1 - Mid Term in ward 36 and 76 completed	PD	Hara, Okamoto, Takeuchi						→	→			→	→					
1-4-3	Compile good practices and lessons from the Project activities	Plan	- Leaflets or articles at the web sites to introduce and disseminate more than two good practices are issued and distributed	PD	Hara, Riad				→	→	→	→	→	→	→	→	→	→	→	→	
		Actual	Good practices from the Project have been selected. Leaflet to be developed in 4FY	PD	Hara, Riad										→	→					
1-4-4	Convene Steerting Committee	Plan	- Inception and Progress Reports are accepted by Steering Committee - Annual activiy plans of the five groups are approved by Steering Committee	CEO, CWMO	Hara		→					→				▶					
		Actual	Sixth steering committee meeting was held in October to present the PR 3 and the Seventh Steering Committee meeting in February end to present PGR 4.	CEO, CWMO, PD	Hara							→				▶					

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009											
				DCC	Expert	3 JFY												4 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1-5	To raise awareness and conduct public relations campaigns on solid waste management																			
1-5-1	Promote public relations activities such as publication of newsletters and development of web pages	Plan	- Newsletters are issued and distributed twice a year - Web site articles are added or revised four times a year	PD	Hara, Riad, Takeuchi															
		Actual	Two newsletters have been issued and distributed. Website has been udpated. Clean Dhaka Ward Contest 2009 has been implemented.	PD	Hara, Ishii, Takeuchi															
1-5-2	Advocate necessary actions to policy makers, related government organizations, city dwellers, etc.	Plan	- Necessary (two) policies, recommendations, rules, standards, or guidelines are advocated in a year	PD	Hara, Riad															
		Actual	Recommendations were made to RAJUK on allocation of land for sanitary landfills in the DAP. City dwellers were guided on SWM through PR activities and CUWG training	PD	Hara, Riad															
1-6-1	To develop solid waste management network among city corporations	Plan	- Seminars/workshops are held once a year - Bangladesh SWM Conferences are held in office in other cities once a year	PD	Hara, Riad															
		Actual	Project Progress Workshop held on 22nd February. 3rd Bangladesh SWIM Conference held in early March.	PD	Hara, Riad															
1-7	To review and modify Clean Dhaka Master Plan	Plan	- Necessary parts of Clean Dhaka Master Plan aare reviewed in order to be suitable to the current conditions	CWMO, SE, PD	Hara, Riad															
		Actual	None	None	None															

Group 2

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009											
				DCC	Expert	3 JFY											4 JFY			
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
2-1	**To develop WARD SWM Guideline**																			
2-1-1	Assess overall participatory SWM activities	Plan	Success factors and failure factors are identified through discussion among counterparts, Communtiy Unit Working Groups and CIs	Sha Alam	Okamoto			→												→
		Actual	Counterpart discussed severl times through the process of implementation of activities and issues are identified based on situation.	Sha Alam	Okamoto			→					→							
2-1-2	Review and Modify WSWM Guideline	Plan	Approaches and process will be reviewed and revised, if necessary	Sha Alam	Okamoto			→												→
		Actual	We decided not to change the guideline at the beginning of this FY. Based on the field experience, it was found that revision is needed. Discussion going on among stakeholders on this matter.	Sha Alam	Okamoto			→								→				
2-2	**To organize community people and support community level SWM activities**																			
	Continuation of supporting community activities in Ward 36 and Ward 76																			
2-2-1	Organization of CUWGs, preparation of action plans and implementatin of the plans	Plan	Action plans are prepared and some activities are implemented	Community Group	Okamoto	→		→	→	→	→	→	→	→	→	→	→	→	→	→
		Actual	Problem analysis was done in CU 6 of ward 76, but CAP has not been prepared yet. In Ward 36, new CUWG of CU2 was established. Plan for new collection system was made and implemented. CAP could not be made.	Community Group	Okamoto	→		→	→	→	→	→	→	→	→	→				
2-2-2	Improvement of collection and transportation system	Plan	Collection and transporation system (including waste discharge, primary/secondary collection) is improved	Community Group	Okamoto	→		→	→	→	→	→	→	→	→	→	→	→	→	→
		Actual	In Ward 36, Station collection using bags was introduced. Oommunity people and PCSPs were involved in the process of introduction through meetings and campaign. In Ward 76, monitoring of new collection system is going on. Leaflet distribution and door	Community Group	Okamoto			→	→	→	→	→	→	→	→	→				
	Establishment of Ward SWM Organization (New Target wards)																			
2-2-3	Survey of Local Organization and Association (new target wards)	Plan	Existing social organizations are identified by survey	Community Group	Okamoto	→	→													
		Actual	Existing social organizations are identified by group discussion	Community Group	Okamoto			→	→	→										
2-2-4	Organize and conduct Kick off meetings	Plan	Ward key persons and residents are informed about Community SWM	Community Group	Okamoto			→	→											
		Actual	Kickoff meetings were organized in all new target wards successfully.	Community Group	Okamoto			→ W6	→ W6	→ W7		→ W4								
2-2-5	Communication with local organization, selection of Community Unit, and nomination of member for CUWG	Plan	Probable Nominee or Applicants for CUWGs are found	Community Group	Okamoto			→	→							→				
		Actual	Field survey was conducted. Target CUs were identified. Potential persons were found for CUWG members.	Community Group	Okamoto			→	→	→										
2-2-6	Organization of CUWGs involving male and female and selection of representatives	Plan	4 community units in 4 wards are organized and members of CUWGs are motivated to work voluntary basis	Community Group	Okamoto				→	→										
		Actual	5 community units in 4 wards are organized and many of members of CUWGs are enthusiastic to work voluntary basis. Reorganization of CUWGs in some community units are also going on	Community Group	Okamoto				→	→	→	→	→	→	→	→	→			

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009											
				DCC	Expert	3 JFY												4 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
	Support Ward SWM organizations to prepare and implement action plans																			
2-2-7	Preparation of Training material, Training Design	Plan	Training manual and design is developed	Community Group	Okamoto															
		Actual	Training manual was developed for CUWG Training	Community Group	Okamoto															
2-2-8	Conduction of training of community unit working group of ward 36, 76 and four new target wards	Plan	members of 12 CUWGs are trained	Community Group	Okamoto															
		Actual	CUWG members of unit 2,3,7 of ward 36, Unit 1,6 of ward 69, unit 1,2 of ward 63,unit 3 of ward 75 and unit 1,2,3,4 of ward 76 training. Total 281 members of from 10 CUWG participated in the training.	Community Group	Okamoto															
2-2-9	CUWG Survey, Mapping, problem analysis and preparation of Community Action Plan (including collection and transportation improvement)	Plan	Problems and progress of Community SWM are identified , and Community Unit Action Plans are prepared	Community Group	Okamoto															
		Actual	Situation analysis and planning workshops have been done in all wards with participation of around 25 CUWG Members per wards. CAPs were prepared in ward 69, 75 and 63.	Community Group	Okamoto															
2-2-10	Improvement of collection and transportation system (together with Collection and Transporation Group)	Plan	Collection and transporation system is improved and community people are mobilized for the new/conventional collection system.	Community Group	Okamoto															
		Actual	New collection system were introduced in all community units. Community meetings and campaign were organized and community peoples participated well.	Community Group	Okamoto															
2-2-11	Support implementation of community action plans and monitor the activities by the Community Section of WMD involving Conservancy Inspectors	Plan	Activities are carried out by community initiatives. Positive changes are identified.	Community Group	Okamoto															
		Actual	CAP was prepared in ward 36 ,75,63,69 and implemented in all wards except ward 75. CAP could not prepared in ward 44. New collection was incorporated in the CAP by the CUWG and implemented successfully. Community campaigns were carried out successfully s	Community Group	Okamoto															

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009											
				DCC	Expert	3 JFY												4 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
2-3	**To improve primary collection permission and monitoring system**																			
2-3-1	Improve DCC's primary collection permission system and monitoring system (develop formats, appraisal criteria, database, etc.)	Plan	Development of procedure of PCSP permission and monitoring	Community Group	Okamoto															
		Actual	Procedure and forms and apraisal criteria have been developed and concesus have been build with CWMO and CP.	Community Group	Okamoto															
2-3-2	Applying the improved permission and monitoring system	Plan	The system is executed at least the target wards.	Community Group	Okamoto															
		Actual	Discussion is ongoing to conduct field test, training for CO, CSI, CI and PCSPs. Execution was not possible because of political situation. Strategy of application of improved permission system is sorted out.	Community Group	Okamoto															
2-4	**To support primary collection service providers to improve their services**																			
2-4-1	Support PCSPs to improve collection services (expand the coverage areas, coordination with micro credit organizations, provision of improved equipment, etc. for ward 36, 76 and four new target wards)	Plan	Necessary supports are provided based on the situation and service is improved	Community Group	Okamoto															
		Actual	Coordination meeting is going on among community, PCSP and DCC, mainly for new collection system. Handtrolles have been introduced in ward 75 and 63 for narrow street primary collection	Community Group	Okamoto															
2-4-2	Design and development of new equipment, and evaluation of the equipment (together with PCSPs and local people)	Plan	Efficient, user-friendly and environment friendly equipments are developed	Community Group	Okamoto															
		Actual	3 new design rickshaw vans were prepared and performance was evaluated . 2 hand trolleys have been prepared and made operational for narrow street primary collection,	Community Group	Okamoto															
2-5	**To organize awareness raising and environmental education programs in target wards**																			
2-5-1	Development of leaflets and stickers	Plan	Leaflets and stickers are developed and messages are welcomed by communtiy people	Community Group	Okamoto															
		Actual	50,000 leaflets and 50000 stickers were made. Design and messages were changed a little but pictographic illustrations were enhanced.	Community Group	Okamoto															
2-5-2	Organization of Awareness raising programs (Rally, Sticker Campaign, Cultual Program, Miking, etc.)	Plan	Good relationship is developed among community people, PCSPs and DCC, and positive changes are identified.	Community Group	Okamoto															
		Actual	3-4 times miking, sticker, leaflet, door to door campaigns have been done in ward 36,44,63,69. One time Leaflet dissemination and door to door visit conducted in ward 76. Two cultural program held one in a public place and another one in ward 63.	Community Group	Okamoto				26						25					
2-5-3	Environmental Education Program	Plan	School program is improved and positive shanges among the children are identified.	Community Group	Okamoto															
		Actual	Mobile School, Recycle Bank program going on, Planning of community children EEP was done.	Community Group	Okamoto			1	1	1	2	1	1	1			1			

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009											
				DCC	Expert	3 JFY												4 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
2-6	**To coordinate among community people, primary collection service providers and DCC**																			
2-6-1	Regular communication with CUWGs and PCSPs and organization of coordination meetings among DCC, CUWGs, and primary collection service providers	Plan	Good relationship is developed and local SWM problmes are solved.	Community Group	Okamoto						→	→	→	→	→	→	→	→	→	→
		Actual	Good relationship is developed and local SWM problmes are Identified and some problems have been solved.	Community Group	Okamoto	→	→	→	→	→	→	→	→	→	→	→				
2-6-2	Coordinate with related organizations to improve the scattering waste around containers and dustbins	Plan	Containers' surrounding area are free from scattering waste, recyclable sorting (not always) and uncontrolled leachate flow	Community Group	Okamoto						→	→	→	→	→	→	→	→	→	→
		Actual	Coordation with PCSP and Communtiy is going on. Container surrounding environment improved. Many open dumping points are closed.	Community Group	Okamoto				→	→	→	→	→	→	→	→				
2-7	**To conduct training programs for the counterparts on participatory SWM**																			
2-7-1	Basic Computer Education	Plan	Counterparts get skills of Ward and Powerpoint	Community Group	Okamoto							→								
		Actual	Postponed to next FY	Community Group	Okamoto															
2-7-2	PRA Training	Plan	Counterpart gain the knowledge of participatory planning, implementation, monitoring, and evaluation, and facilitation skills.						→						→					
		Actual	PRA Basic and PRA Advanced Training Programs were conducted. CO, CSI and CI participated and gained the knowledge of participatory planning, implementation, monitoring, and evaluation, and facilitation skills. In addition, TOT was conducted and partic							→					→					

Group 3

Item	Activity	Status	Result	Person in charge		2007/2008					2008/2009									
				DCC	Expert	3 JFY											4 JFY			
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
3-1	**To conduct surveys and data collection and analysis for improvement of collection efficiency**																			
3-1-1	Data collection and analysis	Plan	Weighbridge database will be collected and analyzed, supplementary time and motion surveys wiill be made and low performing trucks will be identified	Safiullah	Riad, Takasugi															
		Actual	Analysis of the April, May, June and July data are completed. Low performing trucks were identified. For easy analysis of the weighbridge data develpoing of some secondary software is goning on. Ward SWM maps are being prepared. The Mini Transfer Stations survey has been done.	Safiullah	Riad, Takasugi															
3-1-2	Improve truck allocation and route	Plan	Improvement alternatives will be studied and most optimum will be implemented and evaluated as to extent of the improvement	Hasnat, Safiullah, Biswas	Takasugi, Riad															
		Actual	From the study it is found that at present the main reason of the low performing vehicles is their age. It is recommended to further survey for 5-6 identified LPT (open trucks) when the timing is right to do so.	Hasnat, Safiullah, Biswas	Takasugi, Riad															
3-1-3	Improve reporting and monitoring system	Plan	Weighbridge database will be improved and records of pool, workshop and CIs will be properly maintained	Hasnat, Safiullah, Biswas	Takasugi, Riad															
		Actual	The proposals for improvement have been made. It is expected that such improvements may be made once WMD is established and effectively fuinctions.	Hasnat, Safiullah, Biswas	Takasugi, Riad															
3-2	**To improve efficiency of collection system**																			
3-2-1	Improve existing collection system and introduce new collection system in WBA	Plan	Analysis of existing consitions in target wards, development of collection improvement plans and their imlementation	Hasnat, Biswas	Riad, Ishii															
		Actual	This activity has not progressed as there was no further surveys implemented for the LPT as explained above.	Hasnat, Biswas	Riad, Ishii															
3-2-2	Evaluate and prepare expansion plans for new collection system in WBA and other wards	Plan	Monitor the implementation, evaluate and modify and prepare expansion plans for the new collection systems including introduction to new wards	Hasnat, Safiullah	Ishii, Riad															
		Actual	New collection system has started at 5 wards (36, 44, 63 69 & 75). For 2 months monitoring is done by JET, now the respective CI's are monitoring. At ward 69 it is already expanded.	Hasnat, Safiullah	Ishii, Riad															
3-2-3	Prepare procurement plans for collection equipments *and their utilization*	Plan	Based on existing equipment and equipment developed in new collection system procurement plans for equipment of the M/P will be reviewed and more realistic plans will be prepared	Hasnat, Safiullah	Takasugi, Riad															
		Actual	The collection trucks types and capacities proposed for the environmental grant program were estimated. The Road Plan has been prepared.	Hasnat, Safiullah	Takasugi, Riad															

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009											
				DCC	Expert	3 JFY												4 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
3-3	**To improve the system of repair and maintenance of equipments**																			
3-3-1	Improvement of Procurement Procedures	Plan	Review the new procurement processes of DCC noticed on 8th January 2008 and propose possible means for shortening the procurement processes and time for spare parts and for local work shop repair work.	Hasnat	Riad, Takasugi															
		Actual	Analysis on new procurement process studied and reported in Progress Report 3.	Hasnat	Riad, Takasugi															
3-3-2	Capacity development	Plan	The capacity development under this activity is implemented for the field staff directly engaged in the repair work. The major capacity development activities are to standardize the work process and upgrade the skills of repair and maintenance work.	Maksud, Hasnat	Takasugi															
		Actual	Discussions have been done to propose the sectors for capacity development. Actual implementation should be done in discussion with Mechanical Division.	Maksud, Hasnat	Takasugi															
3-3-3	Procurement of repair tools and equipment	Plan	Existing repair tools and equipment are not sufficient in the number and the kinds. This activity is aiming at procurement of supplemental/additional tools and equipment essentially required for upgrading the quality of repair and maintenance work.	Hasnat, Ekramul	Takasugi															
		Actual	List of repair tools and equipment is finalized and will be procured from Environmental Grant Aid Project	Hasnat, Ekramul	Takasugi															
3-3-4	Computerizing of book keeping	Plan	Among the four log books recorded in Mechanical Workshop-1, the stock book is most important to know the balance of remaining spare parts. The activity is mainly conducted for the regular inventory of spare parts of each type of vehicle.	Hasnat, Ekramul	Takasugi															
		Actual	Training to some persons of the Mechanical Workshop was planned, but due to shortage of the manpower it was stopped.	Hasnat, Ekramul	Takasugi															
3-4	**To train technicians, repair mechanics, drivers, cleaners, and other workers**																			
3-4-1	Improve Cleaners working methods	Plan	Distribution of the workers manuals to all cleaners and application of the manual in 15 wards under WBA program, including training workshops, etc.	Maksud, Biswas	Ishii															
		Actual	Distribution of the workers manuals to all cleaners and application of the manual in 15wards and some revision work has started for easily adoptaion by the cleaners	Maksud, Biswas	Ishii															
3-4-2	Improve Cleaners working conditions	Plan	Distribution of workers safety gears in 15 wards, with distribution ceremonies and inspection of utilization	Biswas	Ishii															
		Actual	Distribution of workers' safety gears in 9 wards (6,33,44,56,58,63,65,69 & 75) has already completed	Biswas	Ishii															
3-4-3	Development of Collection and Transport guidelines for engineers, Cis and drivers	Plan	Technical guidelines will be developed through discussion workshops and meetings	Hasnat, Maksud, Biswas	Riad, Ishii															
		Actual	Technical guidelines for collection and transport have been prepared in a draft form and will be finalized next 4th JFY. Preparation was based on the discussions held within the CTG. Also members of DCC have been trained on the GIS use.	Hasnat, Maksud, Biswas	Riad, Ishii															

Group 4

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009											
				DCC	Expert	3 JFY												4 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
4-1	**To develop sanitary landfill (by DCC)**																			
4-1-1	Continue facility construction and operation at Existing Matuail Landfill (by DCC)	Plan	Construction as per design drawing	PD, Mahabub	Saito															
			Operation as per O/M																	
		Actual	Contractor has been assigned to construct working road and dumping platform and also to make the final slope on the periphery and maintaining the gas vent pipes and leachate pipes.	PD, Mahabub Harun,	Saito															
4-1-2	Construct Mautail Landfill Expansion (by DCC)	Plan	Construction as per design drawing	Mahabub, Harun	Saito															
		Actual	All the works within the contract has been completed.																	
4-1-3	Formulate and submit Environment Impact Assessment for Amin Bazar new landfill to DOE (by DCC)	Plan	EIA and EMP, Environment certificate	PD, Maksud	Saito															
		Actual	Legal issue with BELA is still unresolved hence no progress in this regard.	PD, Maksud	Saito															
4-1-4	Secure necessary budget and construct Amin Basar new landfill (by DCC)	Plan	DPP Approval	PD, Farid	Saito															
			Construction as per design drawing	PD, Farid	Saito															
		Actual	Budget has been secured. In this fiscal year total 29crore taka has been allocated to procure heavy equipments, dump trucks and repairing & re-construction of the some part of the embankments.	PD, Farid	Saito															
4-2	**To operate and manage sanitary landfill**																			
4-2-1	Functional Set-up of manpower (by DCC)	Plan	Tentative LMU	CWMO, PD	Saito															
		Actual	Required number of manpower has not been assigned fully for landfill operation and functional setup is still to be completed.	CWMO, PD	Saito															
4-2-2	Prepare budget for O&M of Matuail Landfill (by DCC)	Plan	Budget proposal, Actual budget of DCC	Pd, Mahabub	Saito															
		Actual	Budget for this fiscal year was prepared by LMU and contractors have been selected accordingly to conduct the required works	Pd, Mahabub	Saito															
4-2-3	Conduct on the job training on operation and maintenance of existing Matuail landfill for WMD counterpart personnel	Plan	Training report, Upgrade skills	PD	Saito															
		Actual	It's a continuous process and job training through organising workshops, field demonstration are done time to time.	PD	Saito															
4-2-4	Recommend/Advocate for incentives for landfill personnel (e.g. health insurance)	Plan	Proposed to DCC	PD	Saito															
		Actual	Although proposed earlier but no further progress in this regard.	PD	Saito															
4-2-5	Improve working condition of waste pickers (livelihood security) (by DCC)	Plan	Invite NGO proposal, Tender and Evaluation	PD	Saito															
		Actual	LMU has considered to engage one NGO to work on the improvement of working condition of waste pickers at Matuail.	PD	Saito															
4-2-6	Prepare Operational Manual	Plan	OM for the staff of LMU to be easyly used, Periodical revise	Mahabub	Saito															
		Actual	Operation Manual is available in both english and bengali version.	Mahabub	Saito															

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009											
				DCC	Expert	3 JFY												4 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
4-2-7	Estimate requirements/ request for requisite landfill equipment	Plan	Plan of required landfill equipments	Mahabub, Harun, Nuruzzaman, Siddique	Saito															
		Actual	LMU demands the heavy equipments to the mechanical workshop depending on the amount of waste and dumping condition but as the available equipments are chmuch troubles and there is not much reserve of the supporting equipments	Mahabub, Harun, Nuruzzaman, Siddique	Saito															
4-2-8	Conduct administrative and functional control of the concerned staff	Plan	Attendance record	PD, Admin.	Saito															
		Actual	Register in the Attendance record.	PD, Admin.	Saito															
4-2-9	Conduct on the job training on operation and maintenance of Amin Bazar landfill for WMD counter personnel	Plan	Training report, Upgrade skills	PD	Saito															
		Actual	Not yet initiated																	
4-2-10	Examine Outsourcing of Landfill O&M	Plan	Prepare report	PD	Saito															
		Actual	Will be later after ensurance of smooth control over the operation and management of landfill site by the LMU staffs	PD	Saito															
4-3	**To conduct environmental monitoring**																			
4-3-1	Conduct Environment Monitoring for operation and maintenance in existing Matuail landfill	Plan	Monitoring as per EMP and O/M	Farid	Saito															
		Actual	Environmental monitoring by LMU is done irregularly and engagement of expert laboratory for environmental monitoring has not been done yet.	Farid	Saito															
4-3-2	Formulate and submit Environment Management Plan for Matuail landfill expansion to DOE (by DCC)	Plan	EIA and EMP, Environment certificate	PD, Maksud	Saito															
		Actual	File has been initiated and work is under progress.	PD, Maksud	Saito															
4-3-3	Facilitate DOE to prepare landfill standards	Plan	Tentative Landfill Standard, Workshop on LF	PD	Saito															
		Actual	One individual consultant will be engaged to deal with the waste management handling guidelines in DCC and he will also be working on the landfill standards as required.	PD	Saito															
4-3-4	Conduct Environment Monitoring for operation and maintenance of Amin Bazar new landfill	Plan	Monitoring as per EMP and O/M	PD, Maksud	Saito															
		Actual	Not yet initiated	PD, Maksud	Saito															
4-3-5	Set-up Environmental site laboratory (by DCC)	Plan	Site lab set-up, Monitoring Report	Farid	Saito															
		Actual	At Matuail environmental laboratory and required furniture have been arranged for environmental monitoring. At present environemtnal monitoring is being carried out using the instruments supplied by JICA Expert Team. There is plan to improve the laborator	Farid	Saito															

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009											
				DCC	Expert	3 JFY												4 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
4-4	**To evaluate landfill operation improvement**																			
4-4-1	Assess the changes/ improvement of disposal sites by regulatory bodies (by DCC)	Plan	Evaluation Committee	PD	Saito											→				
			Evaluation Report	PD	Saito					→						→				
		Actual	Assess the improvement of disposal sites by landfill staffs	PD	Saito											→				
4-4-2	Sensitize DCC policy makers (e.g. on importance and budget requirement)	Plan	Workshop, Seminer	PD	Saito					→						→				
		Actual	Sensitization has been done by acknowledgement and participation of DCC policy makers in different workshops, seminars, conference and activities.	PD	Saito					→						→				

Group 5

Item	Activity	Status	Result	Person in charge		2007/2008			2008/2009									
				DCC	Expert	3 JFY									4 JFY			
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
5-1	**Develop a financial report**																			
5-1-1	Regular monitoring for smooth data collection	Plan	Monitoring is made in month.	Mizanur Rahman	Osakabe															
		Actual	Monitoring has been made in every months.	Mizanur Rahman	Osakabe															
5-1-2	Collect actual cost data and actual revenue data (periodically/monthly)	Plan	Necessary data is submitted to WMD by the related department reguraly.	Mizanur Rahman (Rokeya Akter)	Osakabe															
		Actual	Necessary data is submitted to WMD by most related departments reguraly	Mizanur Rahman (Rokeya Akter)	Osakabe															
5-1-3	Input data and output annual budget and monthly actual cost	Plan	Input and output operation is carried out correctly.	Mizanur Rahman (Rokeya Akter)	Osakabe															
		Actual	Input and output operation of actual is carried out correctly.	Mizanur Rahman (Rokeya Akter)	Osakabe															
5-2	**Prepare proposal for financial plan**																			
5-2-1	Analyze the data	Plan	Incorporate the SWMexpenditure with revenue	Mizanur Rahman	Osakabe															
		Actual	Incorporation has been done. Revenue enhancement measures to be discussed in 2009.	Mizanur Rahman	Osakabe															
5-2-2	Analyze annual activity plans	Plan	Prepare Annual Plan of activities of 2008-09	Mizanur Rahman	Osakabe															
		Actual	Firstly new Budgeting system will be established with in February 2009. Secondly 2009/10 WMD budget will be prepared.	Mizanur Rahman	Osakabe															
5-2-3	Prepare draft proposal	Plan	Prepare draft proposal when necessary	Mizanur Rahman	Osakabe															
		Actual	To be discussed	Mizanur Rahman	Osakabe															
5-3	**To Improve Procurement and Payment Process**																			
5-3-1	To analyse the existing process and identify the problems	Plan	Collect adequate information about procurement and payment process	Belal Hossain Mizanur Rahman	Hara															
		Actual	to be collected	To be discussed	To be discussed															
5-3-2	To find solutions	Plan	Prepare proposal to improve existing process	Belal Hossain Mizanur Rahman	Hara															
		Actual	To be discussed	To be discussed	To be discussed															
5-3-3	To Propose improvement	Plan	Consistant procurement and paymen process	Belal Hossain Mizanur Rahman	Hara															
		Actual	To be discussed	To be discussed	To be discussed															

4th JFY
Group 1

Item	Activity	Status	Result	Person in charge		2008/2009			2009/2010										
				DCC	JET	4 JFY											5 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1-1	To establish Waste Management Department (by DCC)	Plan	(1) Clarify job allocations of the respective wings of WMD	CEO, CWMO	Hara, Ishii															
		Actual	Job descriptions of were defined in WMD document submitted to Min. LGRD&C and approved by the Ministry. This will further to be prepared concreately to be understanderble for the person who will take theposts. This FY it could not be prepared because the	EE (C&T)	Hara															
1-2	To strengthen human resources and institution of Waste Management Department																			
1-2-1	Develop by-laws, regulations, guidelines (if needed)	Plan	(1) Develop GL for commercial and industrial wastes as required by the Directives	CWMO, SE	Hara, Riad															
		Actual	Order on demolition waste was issued by DCC.	CWMO, Add. CWMO	Hara, Riad															
1-2-2	Establish ward SWM offices and strengthen office function	Plan	(1) WBA1 Construct or Renovate and strengthen 7 Ward SWM Offices	CWMO, SE	Hara, Riad															
		Actual	A ward office was constructed and two ward offices were rennovated. Other offices were not constructed because DCC could not get land clearance or get apporval by the Mayor.	CWMO, Add,CWMO	Hara, Ishii															
1-3	To prepare Annual Activity Plans	Plan	(1) Develop the plans based on the M/P and Directives by each respective Project Group (2) Estimate the costs and prepare the budget	CWMO, SE	Hara, Osakabe															
		Actual	(1) Annual activity plans of the five groups were developed through discussion between DCC and JET. (2) Budget for DCC part are to prepared with support of JET.	CWMO, Group and Deputy Leaders	Hara, Osakabe															
1-4	To coordinate Project activities																			
1-4-1	Hold monthly Project Meetings among counterpart personnel of WMD, Japanese experts anc concerned personnel in other departments (Project Team Meeting)	Plan	(1) Hold monthly meetings with clear agenda and resolutions	CWMO, SE	Hara, Riad															
		Actual	Project Team Meetings were held in June, August, September, October, December, January, February with clear agenda and resolutions were recorded.	CWMO, Group Leaders	Hara, Riad, Ishii															
1-4-2	Conduct questionnaire surveys with beneficiaries of SWM service	Plan	(1) Conduct public awareness surveys in seven wards where WBA are to introduced and in 4 old wards	PD	Takeuchi															
		Actual	Public awareness surveys were conducted in seven new WBA wards and in four previus WBA wards.	PD	Takeuchi															

Item	Activity	Status	Result	Person in charge		2008/2009				2009/2010										
				DCC	JET	4 JFY											5 JFY			
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1-4-3	Compile good practices and lessons from the Project activities	Plan	(1) Discuss on candidate good practices and compile in Progress Reports	PD	Hara, Riad															
		Actual	Good practices were discussed in a Project Team Meeting and the discussion results were compiled the Projecin Progress Report 5 and 6.	PD	Hara, Riad															
1-4-4	Convene Steerting Committee and Project Progress Workshop	Plan	(1) Convene three Steering Committee Meetings for presentation of 4th JFY Implementation Plan (June '09), PR5 (Oct. '09) and PR6 (Feb. '10), and Project Progress Workshop (Dec. '09)	CEO, CWMO, SE	Hara, Riad, Ishii															
		Actual	Steering Committee meetings were convened for presentation of 4th JFY Implementation Plan (June '09), PR5 (Nov. '09) and PR6 (Mar. '10), and Project Progress Workshop (Dec. '09)	CEO, CWMO, SE	Hara, Riad, Ishii															
1-5	To raise awareness and conduct public relations campaigns on solid waste management																			
1-5-1	Promote public relations activities such as publication of newsletters and development of web pages	Plan	(1) Use of mass media (TV, radio) to raise awareness (2) Continue leaflets, News letters and Web page	PD	Hara, Riad, Takeuchi															
		Actual	Use of mass media (Newspaper) to raise awareness. Leaflets were issued. News letters were published four times and Web page were updated.	PD	Hara, Riad, Takeuchi															
1-5-2	Advocate necessary actions to policy makers, related government organizations, city dwellers, etc.	Plan	Discuss and advocate as required	PD	Hara, Riad															
		Actual	No signigicant discussion and reuirement.	PD	Hara, Riad															
1-6	To develop solid waste management network among city corporations	Plan	(1) Convene Secretariat meeting in Dhaka (2) Hold 4th BSWMC in Khulna (by Secretariat)	PD	Hara															
		Actual	Secretariate meeting was postponed due to election and change in Mayor's opinoin.	PD	Hara															
1-7	To review and modify Clean Dhaka Master Plan	Plan	(1) Identify M/P revision components based on Directives (e.g. street sweeping, landfill operation hours, waste receiving at landfills, collection improvement, 3Rs, Ward SWM Guidelines and Primary Collection)	CWMO, SE, PD	Hara, Riad															
		Actual	After discussions, a socio-economic survey on newly expanded Dhaka jurisdiction and a recycling survey was conducted	SE, PD	Hara, Riad															

Group 2

Item	Activity	Status	Result	Person in charge		2008/2009			2009/2010										5 JFY		
				DCC	JET	4 JFY															
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	
2	**Promotion of participatory solid waste management program**																				
2-1	**To develop Ward SWM Guideline**																				
2-1-1	Assess overall participatory SWM activities	Plan	Approaches and processes of Community SWM in 6 wards will be evaluated. The success/ failure factors will be identified.	Shah Alam, Afsana	Okamoto			→													
		Actual	We discussed about the points to be revised.	Shah Alam, Afsana	Okamoto			→					→			→					
2-1-2	Review and revise Ward SWM Guideline	Plan	The guideline will be revised based on the assessment. The revised guideline will be distributed to counterparts and key CUWG members.	Shah Alam, Afsana	Okamoto			→													
		Actual	The revised guideline has not been prepared yet.	Shah Alam, Afsana	Okamoto																
2-2	**To organize community people and support community level SWM activities**																				
a)	**Continuation of supporting community activities in Ward 36, 76, 63, 69, 75 and 44 (targets wards selected in 2nd or 3rd JFY)**																				
2-2-1	Organization of CUWGs, preparation of action plans and implementation of the plans	Plan	One new CU will be selected in each ward for expansion. Training for newly established CUWGs will be organized. CUWGs will be formalized by community. Community SWM process is followed for all CUWGs.	Community Group	Okamoto																→
		Actual	In Ward 76 and 69, new CUWGs were organized, CUWG training was conducted and CAPs were prepared. In the remaining wards, the community SWM activities were not expanded to new Community Units. In those wards, CIs worked with the existing CUWGs.	Community Group	Okamoto	→															→
2-2-2	Improvement of collection and transportation system	Plan	Collection and transportation will be improved together with CTG. CUWG meetings and campaigns will be organized. New/improved waste discharge and primary collection will be monitored.	Community Group	Okamoto																→
		Actual	The newly introduced or improved collection system were followed up by CIs.	Community Group	Okamoto	→															→
b)	**Establishment of Ward SWM Organizations, and support them to prepare and implement CAPs (7 new target wards)**																				
2-2-3	Survey of local organizations/associations	Plan	Firstly, new CIs will be trained. Community key persons and organizations will be identified through transect walk and the meetings with commissioner	Community Group	Okamoto		→														
		Actual	2-days WBA Training for COs, CSIs and CIs were organized. Surveys were carried out by CIs of WBA wards.	Community Group	Okamoto			→	→												
2-2-4	Kickoff Meetings	Plan	Ward key persons and residents will be informed about Community SWM, and potential CUWG members will be found.	Community Group	Hara, Riad				→	→											
		Actual	Kickoff Meetings were organized in all new target wards.	Community Group	Hara, Riad				→	→											
2-2-5	Selection of Community Units	Plan	One community unit will be selected in each ward though discussions with CI, Commissioner and CTG, and site visits.	Community Group	Okamoto, Riad				→	→											
		Actual	One community units was selected in each new target ward.	Community Group	Okamoto, Riad				→	→											
2-2-6	Organization of CUWGs	Plan	Meetings will be held at CU level to share the process of Community SWM and CUWG's roles and responsibilities. CUWG will be formalized by community, and members will be motivated to work voluntary basis	Community Group	Okamoto				→	→	→										
		Actual	Meetings were held and CUWGs were organized.	Community Group	Okamoto					→	→	→	→	→							
2-2-7	Conduction of training for CUWGs	Plan	Practical Community SWM manuals for CUWG members will be developed. CUWG members will be trained.	Community Group	Hara, Riad				→	→	→										
		Actual	Trainings were organized for the CUWG members of Ward 45, 42, 84, 5 and 53. The remaining two wards, Ward 50 and 49, did not conduct the training.	Community Group	Hara, Riad							→	→	→							

Item	Activity	Status	Result	Person in charge		2008/2009			2009/2010											
				DCC	JET	4 JFY											5 JFY			
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
2-2-8	Survey, mapping, problem analysis and preparation/revision of Community Action Plan	Plan	Problems of Community SWM will be identified , and CAPs will be prepared.	Community Group	Okamoto															
		Actual	CUWGs of Ward 45, 42, 84, 5 and 53 prepared CAPs. Ward 50 and 49 CUWG did not prepare CAPs.	Community Group	Okamoto															
2-2-9	Improvement of collection and transportation system (together with Collection and Transportation Group)	Plan	Collection and transportation will be improved. Community people are mobilized for the new/improved system.	Community Group	Okamoto															
		Actual	Collection and transportaion system was improved in Ward 84, 5, 45, 50. In Ward 42, 53, 49, CUWGs held meetings and discussed how to improve the system, however, it has not been carried out yet.	Community Group	Okamoto															
2-2-10	Support implementation of community action plans and monitor the activities by the counterparts, concerned CIs, CSIs and COs.	Plan	Communty activities will be implemented, such as campaigns, cleaning programs, closing dustbins/open dumping points, source separation and other 3R activities)	Community Group	Okamoto															
		Actual	Community activities were implemented according to the CAP partly.	Community Group	Okamoto															
c)	**Mobilize community people for new collection using compactors (target wards for introducing compactors)**																			
2-2-11	Initial meetings at the ward level	Plan	Target areas will be selected. Process and purpose of compactor collection will be shared with commissioners and key persons .	Community Group	Okamoto															
		Actual	Ward level meetings were not organized.	Community Group	Okamoto															
2-2-12	Dissemination of new collection system.	Plan	Public meetings will be held to explain the new collection system. Campaign programs will be organized in coordination with Ward Commissioner and community key persons.	Community Group	Okamoto															
		Actual	Target areas were selected, and the information was given to some community associations. But Campaign programs were not organized because the new collection system was not introduced in 4th JFY.	Community Group	Okamoto															
2-2-13	Monitoring of new collection system	Plan	CIs monitor the system with, Commissioners and community key persons. The system performance will be discussed in community meetings, and necessary action will be taken.	Community Group	Okamoto															
		Actual	It was decided not to start the new collection system (trial for the compactor introduction) in the wards, which were not the target of WBA.	Community Group	Okamoto															

Item	Activity	Status	Result	Person in charge		2008/2009			2009/2010												
				DCC	JET	4 JFY												5 JFY			
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	
2-3	**To improve primary collection permission and monitoring system**																				
2-3-1	Applying the improved permission and monitoring system	Plan	Field test will be conducted in 6 wards. CIs&COs of all wards will be trained on the improved system, as well as PCSPs at zone level. The system will be executed and monitored.	Community Group	Okamoto																
		Actual	Field test was conducted in WBA wards. Meetings were held with PCSP Assocation and WMD officials. The forms were finalized and submitted to CEO. It is now under process of DCC's approval.	Community Group	Okamoto								→	→	→	→				
2-4	**To support primary collection service providers to improve their services**																				
2-4-1	Capacity development of PCSPs to improve collection services	Plan	Training manual will be developed. Training programs will be organized for PCSPs of 13 wards. Provide necessary support and advices to PCSPs of 13 wards.	Community Group	Okamoto			→	→	→	→	→	→	→	→	→	→	→	→	→	→
		Actual	Training manual was developed. Traing program was organized on March 7, 2010. PCSP of 13 wards were invited.	Community Group	Okamoto			→	→	→	→	→	→	→	→	→	→				
2-4-2	Development of new equipment and evaluation of the equipment (together with PCSPs and local people)	Plan	User-friendly and environment friendly rickshaw vans and hand trolleys will be produced. The performance will be evaluated.	Community Group and CTG	Ishii, Okamoto						→	→	→	→	→	→	→	→	→	→	→
		Actual	Rickshaw vans for the new collection system were developed. Trolleys were also developed to improve the primary collection	Community Group and CTG	Ishii, Okamoto											→	→				
2-5	**To organize awareness raising and environmental education programs in target wards**																				
2-5-1	Development of leaflets and stickers	Plan	Leaflets and stickers are developed.	Community Group	Okamoto									→	→						
		Actual	Leaflets and stickers were developed.	Community Group	Okamoto										→	→	→				
2-5-2	Organization of awareness raising programs	Plan	Seminar on SWM (covering all WBA 1, 2, 3, 4) for Ward Commissioners and Female Commissioners of 13 Wards will be organized.	Community Group	Riad, Hara						→	→									
		Actual	Semiart was organized.	Community Group	Riad, Hara									→	→						
2-6	**To coordinate among community people, primary collection service providers and DCC**																				
2-6-1	Regular communication with CUWGs and PCSPs and organization of coordination meetings among DCC, CUWGs, and PCSPs	Plan	Coordination meetings among CO/CSI/CI, CUWG, PCSPs and Commissioner will be organized once in a month (ward level or community unit level). Good relationship is developed and local SWM problmes are solved.	Community Group	Okamoto				→	→	→	→	→	→	→	→	→	→	→	→	→
		Actual	Some CIs communicated and coordinated well with CUWGs and PCSPs.	Community Group	Okamoto				→	→	→	→	→	→	→	→	→				
2-7	**Training programs for the counterparts**																				
2-7-1	Basic PRA Training	Plan	Counterparts get skills and knowledge of participatory approach and PRA tools. The participants include CIs of new target wards and COs.	Community Group	Okamoto						→										
		Actual	5-days Basic PRA Training was organized. 16 CIs, CSIs and COs participated.	Community Group	Okamoto							→									
2-7-2	Training of Trainers (TOT)	Plan	Counterparts gain skills and knowledge of training methods, lesson planning, preparation and management of training programs (seminar, workshop) and presentation.	Community Group	Okamoto				→												
		Actual	5-days TOT was organized. 15 CIs and COs participated. They utilized what they learned for the CUWG Trainings and PCSP Training.	Community Group	Okamoto					→											

Group 3

Item	Activity	Status	Result	Person in charge		2008/2009			2009/2010											
				DCC	JET	4 JFY												5 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
3-1	**To conduct surveys and data collection and analysis for improvement of collection efficiency**																			
3-1-1	Data collection and analysis	Plan	(1) Continue Matuail weighbridge data collection and analysis (by DCC)	Safiullah	Riad, Takasugi															
		Actual	(1) Continue Matuail weighbridge data collection and analysis but not yet completed	Safiullah	Riad, Takasugi															
3-1-2	Improve truck allocation and route	Plan	(1) Introduce operation rate improvement as required for existing trucks (by DCC) (This activity should be implemented only after weighbridge data is accurately obtained)	Hasnat, Safiullah, Biswas	Takasugi, Riad															
		Actual	(1)This activity is not yet implemented because of weighbridge data is not yet obtained perfectly	Hasnat, Safiullah, Biswas	Takasugi, Riad															
3-1-3	Improve reporting and monitoring system	Plan	(1) Implement monitoring improvements proposed in 3rd JFY.	Hasnat, Safiullah, Biswas	Takasugi, Riad															
		Actual	(1) Trial is under processing	Hasnat, Safiullah, Biswas	Takasugi, Riad															
3-2	**To improve efficiency of collection system**																			
3-2-1	Improve existing collection system and introduce new collection system in WBA	Plan	(1) WBA4A Allocate collection routes for new compactors (2) WBA4B Improve collection systems in 7 CUWGs by improving efficiencies of the PCSPs, encouraging direct discharge by residents, and supporting recycling (manufacture and test 20 hand trolles and 10 RVs with new design, and distribution of buckets and bins to residents)	Hasnat, Maksoud, Biswas	Riad, Ishii, Arai															
		Actual	(1) New conpactor introducing area is inroducing and W5 &W45 were intorduced, .(2)W53,W84 & W49 wre on going	Hasnat, Maksoud, Biswas	Riad, Ishii, Arai															
3-2-2	Evaluate and prepare expansion plans for new collection system in WBA and other wards	Plan	(1) Follow up on new collection systems introduced in WBA wards in 3 JFY (2) Expand new collection systems to other areas in the 6 wards where WBA 4A was implemented in 2 and 3 JFY (by DCC)	Hasnat, Maksoud, Biswas	Ishii, Riad															
		Actual	(1)W36,W44,W63 &W69 were under recovering	Hasnat, Maksoud, Biswas	Ishii, Riad															
3-2-3	Prepare procurement plans for collection equipments *and their utilization*	Plan	(1) Prepare procurement plans for containers for 27 trucks arriving in May and other CC arriving in February	Hasnat, Safiullah	Takasugi, Riad															
		Actual	(1) Number of containers to be procured by DCC was calculated and delapidated containers were identified through existing containers survey.	Hasnat, Safiullah	Takasugi, Riad, Ishii															

Item	Activity	Status	Result	Person in charge		2008/2009			2009/2010											
				DCC	JET	4 JFY												5 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
3-3	**To improve the system of repair and maintenance of equipments**																			
3-3-1	Improvement of Procurement Procedures	Plan	(1) Implementation of the procedure prepared in 3rd FY (by DCC)	Hasnat	Riad, Takasugi															
		Actual	Discussions were held with Workshop on implementation of the proposed new procedure but they postponed implementation till after setting up of new workshop	Hasnat	Riad, Takasugi															
3-3-2	Capacity development	Plan	(1) Development of workshop managers skill (training course preparation, workshop, seminar, manual, etc.) (2) Hold training course by local expert for workers and engineers (1 course x 7 days/ course for 10 persons per course)	Maksud, Hasnat	Takasugi															
		Actual	Both activities were implemented as scheduled.	Maksud, Hasnat	Takasugi															
3-3-3	Procurement of repair tools and equipment	Plan	No activity (equipments will be procured by Env. Grant Aid Program)	Hasnat, Ekramul	Takasugi															
		Actual	No activity (equipments will be procured by Env. Grant Aid Program)	Hasnat, Ekramul	Takasugi															
3-3-4	Computerizing of book keeping	Plan	(1) Implementation of the computerized record keeping introduced by Mech. Div. (by DCC)	Hasnat, Ekramul	Takasugi															
		Actual	This activity was implemented by the Workshop ahead of schedule and discussions were held with JET on the implementation progress and results in July.	Hasnat, Ekramul	Takasugi															
3-4	**To train technicians, repair mechanics, drivers, cleaners, and other workers**																			
3-4-1	Improve Cleaners working methods	Plan	(1) WBA2 Grasp existing cleaners working conditions in general and specific working conditions for street sweeping and drain cleaning (2) WBA2 Introduce Cleaners Manual in practice	Maksud, Biswas	Ishii															
		Actual	(1) Cleaners working condition surveyed on follw up period. (2) 4 times Cleaners workshop were held for 20 wards with distrobuting workers manual which explained working manual.	Maksud, Biswas	Ishii															
3-4-2	Improve Cleaners working conditions	Plan	(1) WBA2 Introduce improvements to street sweeping and drain cleaning, in terms of safety gears distribution and new equipments design (2) Reflect improvements to the manual	Biswas	Ishii															
		Actual	4 times cleaners workshop wrer held.	Biswas	Ishii															
3-4-3	Development of Collection and Transport guidelines for engineers, Cis and drivers	Plan	(1) Implement drivers workshop (around 3 times) (2) Application of guidelines prepared in 3rd FY to the planning for new trucks operation	Hasnat, Maksud, Biswas	Riad, Ishii															
		Actual	Drivers workshop wrerheld. Collection and transportation guidline is under prepareing	Hasnat, Maksud, Biswas	Riad, Ishii															

Group 4

Item	Activity	Status	Result	Person in charge		2008/2009			2009/2010											
				DCC	JET	4 JFY												5 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
4-1	**To develop sanitary landfill (by DCC)**																			
4-1-1	Continue facility construction and operation at Existing Matuail Landfill (by DCC)	Plan	Construction as per design drawing	PD, Mahabub Harun, Farid	Saito															
			Operation as per O/M				→	→	→	→	→	→	→	→	→	→	→	→	→	→
		Actual	Operation as per O/M	PD, Mahabub Harun	Saito		→	→	→	→	→	→	→	→	→	→	→	→	→	→
4-1-2	Construct Mautail Landfill Expansion (by DCC)	Plan	Construction as per design drawing	Mahabub, Harun	Saito															
		Actual	not implemented	Mahabub, Harun	Saito															
4-1-3	Formulate and submit Environment Impact Assessment for Amin Bazar new landfill to DOE (by DCC)	Plan	EIA and EMP, Environment certificate	PD, Maksud	Saito				→	→	→	→	→	→	→	→	→			
		Actual	Legal issue with BELA is still unresolved hence no progress in this regard.	PD, Maksud	Saito															
4-1-4	Secure necessary budget and construct Amin Basar new landfill (by DCC)	Plan	DPP Approval	PD	Saito															
			Construction as per design drawing			→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
		Actual	Construction as per design drawing	PD	Saito	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
4-2	**To operate and manage sanitary landfill**																			
4-2-1	Functional Set-up of manpower (by DCC)	Plan	Tentative LMU	CWMO, PD	Saito		→	→												
		Actual	Tentative LMU	CWMO, PD	Saito		→	→												
4-2-2	Prepare budget for O&M of Matuail Landfill (by DCC)	Plan	Budget proposal, Actual budget of DCC	Pd, Mahabub	Saito		→	→												
		Actual	Budget proposal, Actual budget of DCC	Pd, Mahabub	Saito		→	→												
4-2-3	Conduct on the job training on operation and maintenance of existing Matuail landfill for WMD counterpart personnel	Plan	Training report, Upgrade skills	PD	Saito		→					→				→				
		Actual	Training report, Upgrade skills	PD	Saito		→					→				→				
4-2-4	Recommend/Advocate for incentives for landfill personnel (e.g. health insurance)	Plan	Proposed to DCC	PD	Saito			→	→											
		Actual	not implemented	PD	Saito															
4-2-5	Improve working condition of waste pickers (livelihood security) (by DCC)	Plan	Invite NGO proposal, Tender and Evaluation	PD	Saito							→	→							
		Actual	not implemented	PD	Saito															
4-2-6	Prepare Operational Manual	Plan	OM for the staff of LMU to be easyly used, Periodical revise	Mahabub	Saito															
		Actual	not implemented	Mahabub	Saito															

Item	Activity	Status	Result	Person in charge		2008/2009			2009/2010												
				DCC	JET	4 JFY												5 JFY			
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	
4-2-7	Estimate requirements/ request for requisite landfill equipment	Plan	Plan of required landfill equipments	Mahabub, Harun, Siddique	Saito																
		Actual	Plan of required landfill equipments	Mahabub, Harun, Siddique	Saito																
4-2-8	Conduct administrative and functional control of the concerned staff	Plan	Attendance record	PD, Admin.	Saito																
		Actual	Attendance record	PD, Admin.	Saito																
4-2-9	Conduct on the job training on operation and maintenance of Amin Bazar landfill for WMD counter personnel	Plan	Training report, Upgrade skills	PD	Saito																
		Actual	not implemented	PD	Saito																
4-2-10	Examine Outsourcing of Landfill O&M	Plan	Prepare report	PD	Saito																
		Actual	not implemented	PD	Saito																
4-3	**To conduct environmental monitoring**																				
4-3-1	Conduct Environment Monitoring for operation and maintenance in existing Matuail landfill	Plan	Monitoring as per EMP and O/M	Harun	Saito																
		Actual	Monitoring as per EMP and O/M by Dhaka Univercity	Harun	Saito																
4-3-2	Formulate and submit Environment Management Plan for Matuail landfill expansion to DOE (by DCC)	Plan	EIA and EMP, Environment certificate	PD, Maksud	Saito																
		Actual	not implemented	PD, Maksud	Saito																
4-3-3	Facilitate DOE to prepare landfill standards	Plan	Tentative Landfill Standard, Workshop on LF	PD	Saito																
		Actual	Tentative Landfill Standard, Workshop on LF	PD	Saito																
4-3-4	Conduct Environment Monitoring for operation and maintenance of Amin Bazar new landfill	Plan	Monitoring as per EMP and O/M	PD, Maksud	Saito																
		Actual	Construction was delayed.	PD, Maksud	Saito																
4-3-5	Set-up Environmental site laboratory (by DCC)	Plan	Site lab set-up, Monitoring Report	Farid	Saito																
		Actual	not implemented	Farid	Saito																
4-4	**To evaluate landfill operation improvement**																				
4-4-1	Assess the changes/ improvement of disposal sites by regulatory bodies (by DCC)	Plan	Evaluation Committee	PD	Saito																
			Evaluation Report	PD	Saito																
		Actual	Internal Evaluation, Evaluation report	PD	Saito																
4-4-2	Sensitize DCC policy makers (e.g. on importance and budget requirement)	Plan	Workshop, Seminer	PD	Saito																
		Actual	not implemented	PD	Saito																

Group 5

Item	Activity	Status	Result	Person in charge		2008/2009			2009/2010											
				DCC	JET	4 JFY												5 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
5-1	**Develop a financial report**																			
5-1-1	Regular monitoring for smooth data collection	Plan	Continue monitoring in evey months	Mizanur Rahman	Osakabe															
		Actual	Monitored for smooth data collection periodically	Mizanur Rahman	Osakabe															
5-1-2	Collect actual cost data and actual revenue data (periodically/monthly)	Plan	Continue smooth collection of data	Mizanur Rahman (Rokeya Akter)	Osakabe															
		Actual	Collected necessary data regularly	Mizanur Rahman (Rokeya Akter)	Osakabe															
5-1-3	Input data and output annual budget and monthly actual cost	Plan	Continue imput and output operation regulary and correctly	Mizanur Rahman (Rokeya Akter)	Osakabe															
		Actual	Imputed and outpued regularly and correctly	Mizanur Rahman (Rokeya Akter)	Osakabe															
5-1-4	Collect SWM capital cost	Plan	Keep accounts of depreciation in the financial report	Mizanur Rahman (Rokeya Akter)	Osakabe															
		Actual	Collected fixed assets data, computed depreciation cost and reflected it in the actual cost report	Mizanur Rahman (Rokeya Akter)	Osakabe															
5-2	**Prepare proposal for financial plan**																			
5-2-1	Analyze the data	Plan	Analysis of SWM cost. And hold frequent discussions on revenue enhancement with Revenue Dept.	Mizanur Rahman	Osakabe															
		Actual	Analyzed the SWM cost and reported	Mizanur Rahman	Osakabe															
5-2-2	Analyze annual activity plans	Plan	Revise or improve the bugeting system	Mizanur Rahman	Osakabe															
		Actual	Organized WMD budget system and planned to start from FY 2010/11	Mizanur Rahman	Osakabe															
5-2-3	Prepare draft proposal	Plan	Propose revenue enhacement measures	Mizanur Rahman	Osakabe															
		Actual	To be studied in the 5th year	Belal Hossain Mizanur Rahman	Osakabe															

Item	Activity	Status	Result	Person in charge		2008/2009			2009/2010											
				DCC	JET	4 JFY												5 JFY		
						4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
5-3	**To Improve Procurement and Payment Process**																			
5-3-1	To analyse the existing process and identify the problems	Plan	Identify the problemes through colected data and discussion with the related departments	Belal Hossain Mizanur Rahman	Osakabe, Hara			→	→	→			→	→						
		Actual	Ideified the problems	Belal Hossain Mizanur Rahman	Osakabe, Hara			→	→	→					→	→				
5-3-2	To find solutions	Plan	Hold frequent discussions with the related department for solutions	Belal Hossain Mizanur Rahman	Osakabe, Hara			→	→	→	→	→	→	→	→	→	→			
		Actual	More frequent discussion is to be made in the 5th year.	Belal Hossain Mizanur Rahman	Osakabe, Hara															
5-3-3	To Propose improvement	Plan	Propose improvement	Belal Hossain Mizanur Rahman	Osakabe, Hara											→	→			
		Actual	To be studied in the 5th year	Belal Hossain Mizanur Rahman	Osakabe, Hara															

5th JFY
Group 1

	Activitiy	Status	Result	Person in Charge		2010								2011	
				DCC	JET	4	5	6	7	8	9	10	11	12	1	2
1	Output 1Capacity for management and coordination are in place.															
1-1	Establish Waste Management Department (by DCC)	Plan	* Staffing and Budget/Asset transfer complete. * Job discriptions are prepared.	CWMO, EE (C&T)	Hara											
		Actual	It is still recruiting appropriate staffs. So before full staffs are recruited other jobs are not implemented.	CWMO, EE (C&T)	Hara											
1-2	Strengthen Human Resources and Institutions Waste Management Department															
1-2-1	Establishment of ward-level solid waste management offices and strengthening the function of ward office	Plan	XX and YY Ward Office are constructed and rennovated. If DCC can prepar land clearance within March 2009.	Add.CWMO	Hara, Ishii											
		Actual	No Offices were constructed.													
1-3	Prepare Annual Activity Plans(AAP)	Plan	AAP and Bedget for DCC financial year 2011/12 is prepared by DCC C/P.	CWMO, SE, PD, EE (C&T), Assist. CWMO (Planning)	Hara											
		Actual	They will prepare in and after February	CWMO, SE, PD, EE (C&T), Assist. CWMO	Hara											
1-4	Coordinate Project Activities															
1-4-1	Hold monthly meeting among counterpart personnel of WMD, Japanese Experts (Project Team Meeting)	Plan	Project Team meetings are held once in a month and when necessary.	CWMO	Hara, Riad											
		Actual	Project Team meetings were almost held except the months that held Steering Committee. Nothing to be held in July, August and October.	CWMO	Hara, Riad											
1-4-2	Conduct Questionnaire Surveys with Beneficiaries of SWM Services	Plan	* Achievement of the Project Purpose is assessed. * DCC C/P obtains information to improve its SWM services.	PD	Hara, Takeuchi											
		Actual	As planed.	PD	Hara, Takeuchi											
1-4-3	Compile good practices and lessons from the Project activities	Plan	Leaflets on eigh good practices are published and disseminated.	PD	Hara, Takeuchi											
		Actual	As planed.	PD	Hara, Takeuchi											
1-4-4	Convene Steering Committee	Plan	* Revised M/P is approved. * Final Report is accepted.	CEO, CWMO, SE	Hara											
		Actual	As planed.	CEO, CWMO, SE	Hara											
1-4-5	Hold aFinal Seminar	Plan	* DCC C/P perspponnel is motivated to continue Project activities.	CEO, CWMO	Hara, Ishii, Takeuchi											
		Actual	As planed.	CEO, CWMO	Hara, Ishii											

Activitiy		Status	Result	Person in Charge		2010									2011	
				DCC	JET	4	5	6	7	8	9	10	11	12	1	2
1-5	**Awareness Raising and Public Relations Campaign on Solid Waste Management**															
1-5-1	Promote public relations activities such as publication of newsletters and development of web pages	Plan	* Newsletters are issued and distributed twice. * Web site articles are updated.	CWMO, PD	Hara, Ishii, Takeuchi		→	→	→	→	→	→	→	→	→	
		Actual	As planed.	CWMO, PD	Hara, Ishii, Takeuchi		→	→	→	→	→	→	→	→	→	
1-5-2	Hold Clean Dhaka Week	Plan	* Clean Dhaka Week is held under management of DCC/CP.	CWMO, PD	Hara, Riad								→			
		Actual	It is postponed.													
1-6	**Development of Solid Waste Management Network among City Corporations**															
1-6-1	A secretariat meeting is held.	Plan	* Design to sustain network for SWM among City Corporations is made.	PD	Hara, Riad					→	→					
		Actual	It was included Closing seminar	PD	Hara											→
1-6-2	Babgladesh SWM Conference is held.	Plan	* Secretariats manage the Conference. * Experience and good practices are shared with other city corporation.	PD	Hara								→			
		Actual	It was not held but participants were invited in Final Seminar.													
1-7	**Review and modify Clean Dhaka Master Plan**	Plan	* Clean Dhaka Master Plan is revised according to the changes in the situations and conditions.	PD, EE(C&T), Assist. CWMO (Planning)	Hara, Riad				→	→	→	→				
		Actual	As planed.	PD, EE(C&T), Assist. CWMO (Planning)	Hara, Riad				→	→	→	→	→	→	→	

Group 2

Item	Activity	Status	Result	Person in charge		2009/2010			2010/2011								
				DCC	Expert	5th JFY											
						4	5	6	7	8	9	10	11	12	1	2	3
2	**Promotion of participatory solid waste management program**																
2-1	**To develop Ward SWM Guideline**																
2-1-1	Review and revise Ward SWM Guideline	Plan	The guideline will be revised based on the assessment. The revised guideline will be distributed to counterparts and key CUWG members.	AdCWMO & Community G	Okamoto			→									
		Actual	The guideline was revised based on the assessment. The revised guideline have been distributed to counterparts and key CUWG members.	AdCWMO & Community G	Okamoto				→	→	→	→	→	→	→		
2-2	**To organize community people and support community level SWM activities**																
a)	**Establishment of Ward SWM Organizations, and support them to prepare and implement CAPs (18 target wards: 5 new, 13 old)**																
2-2-1	Survey of local organizations/associations	Plan	Firstly, new CIs will be trained. Community key persons and organizations will be identified through transect walk and the meetings with commissioner .	AdCWMO, CO, CI & CSWMG	Okamoto	→	→										
		Actual	Firstly, new CIs were trained. Community key persons and organizations were identified through transect walk and the meetings with commissioner .	AdCWMO, CO, CI & CSWMG	Okamoto			→	→	→	→	→					
2-2-2	Kickoff Meetings (only 5 new wards)	Plan	Ward key persons and residents will be informed about Community SWM, and potential CUWG members will be found.	AdCWMO, CO, CI & CSWMG	Hara, Okamoto			→	→								
		Actual	Kikcoff meeting was successfully held in JET supported 3 wards and DCC supported 2 wards.	AdCWMO, CO, CI & CSWMG	Hara, Okamoto				→ 3		→ 1	→ 1					
2-2-3	Selection of Community Units	Plan	One community unit will be selected in each ward though discussions with CI, Commissioner and CTG, and site visits.	AdCWMO, CO, CI & CSWMG with CTG	Okamoto			→	→	→							
		Actual	Implemented	AdCWMO, CO, CI & CSWMG with CTG	Okamoto					→	→						
2-2-4	Organization of CUWGs	Plan	Meetings will be held at CU level to share the process of Community SWM and CUWG's roles and responsibilities. CUWG will be formalized by community, and members will be motivated to work voluntary basis	AdCWMO, CO, CI & CSWMG	Okamoto				→	→	→						
		Actual	Implemented	AdCWMO, CO, CI & CSWMG	Okamoto				→	→	→	→					
2-2-5	Conduction of training for CUWGs	Plan	Community SWM manuals for CUWG members will be utilized. CUWG members will be trained.	AdCWMO, CO, CI & CSWMG	Okamoto				→	→	→	→	→				
		Actual	Old 13 wards 13 UWG took training and new 5 wards 6 CUWG took training.	AdCWMO, CO, CI & CSWMG	Okamoto						→ 3	→ 3		→ 3	→ 6		
2-2-6	Survey, mapping, problem analysis and preparation/revision of Community Action Plan	Plan	Problems of Community SWM will be identified , and CAPs will be prepared.	AdCWMO, CO, CI & CSWMG with CTG	Okamoto				→	→	→	→	→				
		Actual	CAPs are prepared in all target community units and in total for 19 units	AdCWMO, CO, CI & CSWMG with CTG	Okamoto					→	→	→	→	→	→		

Item	Activity	Status	Result	Person in charge		2009/2010			2010/2011								
				DCC	Expert	5th JFY											
						4	5	6	7	8	9	10	11	12	1	2	3
2-2-7	Improvement of collection and transportation system (together with Collection and Transportation Group)	Plan	Collection and transportation will be improved. Community people are mobilized for the new/improved system.	AdCWMO, CO, CI & CSWMG with CTG	Okamoto												
		Actual	Collection and transportation are improved. Community people are mobilized for the new/improved system.	AdCWMO, CO, CI & CSWMG with CTG	Okamoto												
2-2-8	Support implementation of community action plans and monitor the activities by the counterparts, concerned CIs, CSIs and COs.	Plan	Community activities will be implemented, such as campaigns, cleaning programs, closing dustbins/open dumping points, source separation and other 3R activities)	AdCWMO, CO, CI & CSWMG with CTG	Okamoto												
		Actual	Community action plans are implemented, such as campaigns, cleaning programs, closing dustbins/open dumping points, source separation and cultural program)	AdCWMO, CO, CI & CSWMG with CTG	Okamoto												
b)	**Mobilize community people for new collection using compactors (target wards besides the WBA wards for introducing compactors)**																
2-2-9	Dissemination of new collection system.	Plan	Public meetings will be held to explain the new collection system. Campaign programs will be organized in coordination with Ward Commissioner, community associations and PCSPs.	AdCWMO, CO, CI & CSWMG with CTG	Okamoto												
		Actual	Public meetings were held to explain the new collection system with the participation of Parliament Members, state ministers, CEO of DCC and CWMO. Campaign programs will be organized in coordination with Community leaders, community associations and PCSPs.	AdCWMO, CO, CI & CSWMG with CTG	Okamoto												
2-2-10	Monitoring of new collection system	Plan	CIs monitor the system with Ward Commissioner, community associations and PCSPs.. The system performance will be discussed in community meetings, and necessary action will be taken.	AdCWMO, CO, CI & CSWMG with CTG	Okamoto												
		Actual	CIs monitor the system with community leaders, community associations and PCSPs.. The system performance are discussed in WBA meeting and community.	AdCWMO, CO, CI & CSWMG with CTG	Okamoto												
2-3	**To improve primary collection permission and monitoring system**																
2-3-1	Applying the improved permission and monitoring system	Plan	The improved system will be officially introduced. CIs&COs of all wards will be trained on the improved system, as well as PCSPs at zone level. The system will be executed and monitored.	CSWMG	Okamoto												
		Actual	The improved system was officially introduced. CIs&COs of all wards were trained together with PCSP. Two days workshops was organized for C-1 and C-2. The system are executed and monitored.	CSWMG	Okamoto												

Item	Activity	Status	Result	Person in charge		2009/2010			2010/2011								
				DCC	Expert	5th JFY											
						4	5	6	7	8	9	10	11	12	1	2	3
2-4	**To support primary collection service providers to improve their services**																
2-4-1	Capacity development of PCSPs to improve collection services	Plan	Training programs will be organized for PCSPs of 16 WBA wards. Provide necessary support and advices to the PCSPs at the field level.	CSWMG with CTG	Okamoto												
		Actual	All 18 WBA wards PCSP participated PCSP training. Ward from zone 1-4 participated on 22 Sept 2010, wards from Zone 5-8 participated on 23 Sept 2010	CSWMG with CTG	Okamoto												
2-4-2	Development of new equipment	Plan	User-friendly and environment friendly hand trolleys will be produced and used for the improvement of primary collection.	CSWMG with CTG	Okamoto												
		Actual	New equipments was not developed but previous years developed hand trolleys design and concept have been shared with DCC and DCC procured 300 hand trolleys. Their functioning was monitored.	CSWMG with CTG	Okamoto												
2-5	**To organize awareness raising and environmental education programs in target wards**																
2-5-1	Organization of awareness raising programs	Plan	Seminar on SWM (covering all WBA 1, 2, 3, 4) for Ward Commissioners and Female Commissioners of 16 Wards will be organized.	CSWMG	Hara, Okamoto												
		Actual	Seminar of the councilor could not be organized. DCC does not feel suitable situation to hold it. However, based on CAP several campaigns and cultural events was organized.	CSWMG	Hara, Okamoto												
2-6	**To coordinate among community people, primary collection service providers and DCC**																
2-6-1	Regular communication with CUWGs and PCSPs and organization of coordination meetings among DCC, CUWGs, and PCSPs	Plan	Coordination meetings among CO/CSI/CI, CUWG, PCSPs and Commissioner will be organized once in a month (ward level or community unit level). Good relationship is developed and local SWM problems are solved.	AdCWMO, CO, CI & CSWMG	Okamoto												
		Actual	Coordination meetings among CO/CSI/CI, CUWG, PCSPs and Commissioner were organized but it could not be once in a month. Good relationship is developed and local SWM problems are solved.	AdCWMO, CO, CI & CSWMG	Okamoto												
2-7	**Training programs for the counterparts**																
2-7-1	Basic PRA Training (DCC counterparts will train the new WBA CIs)	Plan	Counterparts get skills and knowledge of participatory approach and PRA tools. The participants include CIs of new target wards and COs.	CSWMG	Okamoto												
		Actual	Counterparts got skills and knowledge of participatory approach and PRA tools. The participants include CIs of new target wards and COs. 7 CI and 8 COs and JOCV joined the 5 days PRA training program	CSWMG	Okamoto												
2-7-2	WBA Training	Plan	COs, CSIs and newly joined CIs will understand WBA activities and be ready to implement the activities.	CSWMG	Okamoto												
		Actual	For the preparation of WBA implemntaion 9 to 10 June 2010 WBA training was held with the participation of all WBA wards CI and Most of COs	CSWMG	Okamoto												
2-7-3	Training of Trainers	Plan	15 Counterparts will participate	CSWMG	Okamoto												
		Actual	The specialized training workshop for the trainers to promote community based SWM was held as TOT training with the participation of 13 CI and 7 COs. 3 CI was cooridnators and JOCV was observer of the training.	CSWMG	Okamoto												

Group 3

Item	Activity	Status	Result	Person in charge		2009/2010		2010/2011								
				DCC	Expert	5th JFY										
						4	5	6	7	8	9	10	11	12	1	2	3
3-1	**To conduct surveys and data collection and analysis for improvement of collection efficiency**																
3-1-1	Data collection and analysis	Plan	(1) Continue Matuail weighbridge data collection and analysis (by DCC)	Safiullah	Riad, Ishii, Arai			→	→	→	→	→	→	→	→		
		Actual	(1) Matuail weighbridge data collection and analysis (2) Incoming waste amount survey at Amin bazar landfill	Hasnat, Safiullah, Biswas	Riad, Ishii, Arai				→	→							
3-1-2	Improve truck allocation and route	Plan	(1) Introduce operation rate improvement as required for existing trucks (by DCC) (This activity should be implemented only after weighbridge data is accurately obtained)	Hasnat, Safiullah, Biswas	Riad, Ishii, Arai				→	→	→						
		Actual	(1) This activity has not implemented yet because of no weighbridge at Amin bazar landfill site.	Hasnat, Safiullah, Biswas	Riad, Ishii, Arai												
3-1-3	Improve reporting and monitoring system	Plan	(1) Implement monitoring improvements proposed in 3rd JFY.	Hasnat, Safiullah, Biswas	Takasugi, Riad			→	→	→							
		Actual	(1) Monitoring the improvement of the vehicle operation based on the weighbridge date.	Hasnat, Safiullah, Biswas	Riad				→	→							
3-2	**To improve efficiency of collection system**																
3-2-1	Improve existing collection system and introduce new collection system in WBA	Plan	(1) WBA4A Allocate collection routes for new compactors (2) WBA4B Improve collection systems in 7 CUWGs by improving efficiencies of the PCSPs, encouraging direct discharge by residents, and supporting recycling (manufacture and test 20 hand trolleys and 10 RVs with new design, and distribution of buckets and bins to residents)	Hasnat, Maksoud, Biswas	Riad, Ishii, Arai			→	→	→	→	→	→	→	→	→	
		Actual	(1) 23 compactor has been allocated in different areas as an activity of WBA 4A. (2) Three arm roll trucks has been allocated at market areas as an activity of WBA 4B.	Hasnat, Mahaboo	Riad, Ishii, Arai			→	→	→	→	→	→	→	→	→	

Item	Activity	Status	Result	Person in charge		2009/2010				2010/2011					
				DCC	Expert	5th JFY									
						4	5	6	7	8	9	10	11	12	1	2	3
3-2-2	Evaluate and prepare expansion plans for new collection system in WBA and other wards	Plan	(1) Follow up on new collection systems introduced in WBA wards in 3 JFY (2) Expand new collection systems to other areas in the 6 wards where WBA 4A was implemented in 2 and 3 JFY (by DCC)	Hasnat, Maksoud, Biswas	Ishii, Riad			→	→	→	→	→	→	→	→		
		Actual	(1) New collection system with compactor trucks has been introduce 18 wards in Dhaka city.	Hasnat, Mahaboo, Biswas	Ishii, Riad			→	→	→	→	→	→	→			
3-2-3	Prepare procurement plans for collection equipments *and their utilization*	Plan	(1) Prepare procurement plans for containers for 27 trucks arriving in May and other CC arriving in February	Hasnat, Safiullah	Riad, Ishii, Arai				→	→	→			→	→		
		Actual	(1) Procurement plan was formulated as a part of revised M/P.	Hasnat, Safiullah	Riad, Ishii, Arai							→	→	→			
3-3	**To improve the system of repair and maintenance of equipments**																
3-3-1	Improvement of Procurement Procedures	Plan	(1) Implementation of the procedure prepared in 3rd FY (by DCC)	Hasnat	Riad, Ishii, Arai		→	→	→	→							
		Actual	(1) Implementation of the procedure prepared in 3rd FY (by DCC)	Hasnat	Riad, Ishii, Arai		→	→	→	→							
3-3-2	Capacity development	Plan	(1) Development of workshop managers skill (training course preparation, workshop, seminar, manual, etc.) (2) Hold training course by local expert for workers and engineers (1 course x 7 days/ course for 10 persons per course)	Maksud, Hasnat	Riad, Ishii, Arai				→								
		Actual	(1)Workshops and training to engineers, mechanics and drivers on vehicle maintenance, safety vehicle operation and CNG equipment had been hold through JET and EGAP.	Maksud, Hasnat	Riad, Ishii, Arai		→	→	→	→	→	→					
3-3-3	Procurement of repair tools and equipment	Plan	No activity (equipments will be procured by Env. Grant Aid Program)	Hasnat, Ekramul	Riad, Ishii, Arai			→	→	→	→	→	→				
		Actual	(1) Maintenance equipments were procured through EGAP, however the equipment had not arrived yet.	Hasnat, Ekramul	Riad, Ishii, Arai						→	→	→	→	→	→	→

Item	Activity	Status	Result	Person in charge		2009/2010			2010/2011							
				DCC	Expert	5th JFY										
						4	5	6	7	8	9	10	11	12	1	2	3
3-3-4	Computerizing of book keeping	Plan	(1) Implementation of the computerized record keeping introduced by Mech. Div. (by DCC)	Hasnat, Ekramul	Riad, Ishii, Arai									→	→		
		Actual	(1) A record keeper was appointed and he has kept the record with computer.	Hasnat, Ekramul	Riad, Ishii, Arai		→	→	→	→	→	→	→	→	→	→	
3-4	**To train technicians, repair mechanics, drivers, cleaners, and other workers**																
3-4-1	Improve Cleaners working methods	Plan	(1) WBA2 Grasp existing cleaners working conditions in general and specific working conditions for street sweeping and drain cleaning (2) WBA2 Introduce Cleaners Manual in practice	Maksud, Biswas	Ishii		→	→	→	→	→	→	→	→	→		
		Actual	(1) Safety gears and cleaner's manual were provided through two cleaner's works were held on June 2010 as WBA2. Cleaners has recognized the importance of safety and environmental work condition, gradually.	Maksud, Biswas	Ishii				→	→	→	→	→	→	→		
3-4-2	Improve Cleaners working conditions	Plan	(1) WBA2 Introduce improvements to street sweeping and drain cleaning, in terms of safety gears distribution and new equipments design (2) Reflect improvements to the manual	Biswas	Ishii		→	→	→	→	→	→	→	→	→		
		Actual	(1) Safety gears and cleaner's manual were provided through two cleaner's works were held on June 2010 as WBA2. Cleaners has recognized the importance of safety and environmental work condition, gradually.	Biswas	Ishii				→	→	→	→	→	→	→		
3-4-3	Development of Collection and Transport guidelines for engineers, Cis and drivers	Plan	(1) Implement drivers workshop (around 3 times) (2) Application of guidelines prepared in 3rd FY to the planning for new trucks operation	Hasnat, Maksud, Biswas	Riad, Ishii							→			→		
		Actual	(1) Drivers work shop were held three times for compactor operation. (1) New collection system and plan for compactor operation has been applied based on the surveys conducted in 4th year.	, Mahaboo,	Riad, Ishii		→	→	→								

Group 4

Item	Activity	Status	Result	Person in charge		2009/2010			2010/2011								
				DCC	Expert	5th JFY											
						4	5	6	7	8	9	10	11	12	1	2	3
4-1	**To develop sanitary landfill (by DCC)**																
4-1-1	Continue facility construction and operation at Existing Matuail Landfill (by DCC)	Plan	Operation as per O/M	Mahabub Harun	Saito												
		Actual	Operation as per O/M	Mahabub Harun	Saito												
4-1-2	Construct Mautail Landfill Expansion (by DCC)	Plan	Not Planned														
		Actual	Not Implemented														
4-1-3	Formulate and submit Environment Impact Assessment for Amin Bazar new landfill to DOE (by DCC)	Plan	EIA and EMP, Environment certificate	PD	Saito												
		Actual	Legal issue with BELA is still unresolved hence no progress in this regard.														
4-1-4	Secure necessary budget and construct Amin Basar new landfill (by DCC)	Plan	Construction as per design drawing	PD Mahabub Harun	Saito												
		Actual	Construction as per design drawing	PD Mahabub Harun	Saito												
4-2	**To operate and manage sanitary landfill**																
4-2-1	Functional Set-up of manpower (by DCC)	Plan	Permanent Set of LMU	PD CWMO	Saito												
		Actual	Not Implemented	PD CWMO	Saito												
4-2-2	Prepare budget for O&M of Matuail Landfill (by DCC)	Plan	Budget proposal, Actual budget of DCC	PD	Saito												
		Actual	Budget proposal, Actual budget of DCC	PD	Saito												
4-2-3	Conduct on the job training on operation and maintenance of existing Matuail landfill for WMD counterpart personnel	Plan	Training report, Upgrade skills	Harun Mahabub	Saito												
		Actual	Training report was not prepared	Harun Mahabub	Saito												
4-2-4	Recommend/Advocate for incentives for landfill personnel (e.g. health insurance)	Plan	not Planned														
		Actual	not implemented														
4-2-5	Improve working condition of waste pickers (livelihood security) (by DCC)	Plan	Invite NGO proposal, Tender and Evaluation	PD	Saito												
		Actual	Not implemented														
4-2-7	Estimate requirements/ request for requisite landfill equipment	Plan	Plan of required landfill equipments	Harun Mahabub	Saito												
		Actual	Plan of required landfill equipments	Harun Mahabub	Saito												

Item	Activity	Status	Result	Person in charge		2009/2010			2010/2011								
				DCC	Expert	5th JFY											
						4	5	6	7	8	9	10	11	12	1	2	3
4-2-8	Conduct administrative and functional control of the concerned staff	Plan	Attendance record	PD/Admi.	Saito												
		Actual	Attendance record	PD/Admi.	Saito												
4-2-9	Conduct on the job training on operation and maintenance of Amin Bazar landfill for WMD counter personnel	Plan	Training report, Upgrade skills	PD	Saito												
		Actual	It has not yet recruited														
4-2-10	Examine Outsourcing of Landfill O&M	Plan	not Planned														
		Actual	Not implemented														
4-3	**To conduct environmental monitoring**																
4-3-1	Conduct Environment Monitoring for operation and maintenance in existing Matuail landfill	Plan	Monitoring as per EMP and O/M	PD Harun	Saito												
		Actual	Monitoring as per EMP and O/M	PD Harun	Saito												
4-3-2	Formulate and submit Environment Management Plan for Matuail landfill expansion to DOE (by DCC)	Plan	EIA and EMP, Environment certificate	PD	Saito												
		Actual	Not implemented	PD	Saito												
4-3-3	Facilitate DOE to prepare landfill standards	Plan	Tentative Landfill Standard, Workshop on LF	PD	Saito												
		Actual	Not implemented	PD	Saito												
4-3-4	Conduct Environment Monitoring for operation and maintenance of Amin Bazar new landfill	Plan	Monitoring as per EMP and O/M														
		Actual	Not implemented														
4-3-5	Set-up Environmental site laboratory (by DCC)	Plan	Site lab set-up, Monitoring Report at Aminbazar LFS	PD	Saito												
		Actual	Not implemented	PD	Saito												
4-4	**To evaluate landfill operation improvement**																
4-4-1	Assess the changes/improvement of disposal sites by regulatory bodies (by DCC)	Plan	Evaluation survey	PD	Saito												
		Actual	Evaluation survey	PD	Saito												
4-4-2	Sensitize DCC policy makers (e.g. on importance and budget requirement)	Plan	Workshop, Seminer	PD Harun	Saito												
		Actual	Not implemented	PD Harun	Saito												

Group 5

Item	Activity	Status	Result	Person in charge		2009/2010			2010/2011							
				DCC	Expert	5th JFY										
						4	5	6	7	8	9	10	11	12	1	2	3
5-1	**Develop a financial report**																
5-1-1	Regular monitoring for smooth data collection	Plan	Monitoring is made in month.	Mizanur Rahman	Osakabe												
		Actual	Monitoring has made by second week of month.	Mizanur Rahman	Osakabe												
5-2-2	Collect actual cost data and actual revenue data (periodically/monthly)	Plan	Necessary data is submitted to WMD by the related department reguraly.	Mizanur Rahman	Osakabe												
		Actual	Related departments submitted data reguraly.	Mizanur Rahman	Osakabe												
5-1-3	Input data and output annual budget and monthly actual cost	Plan	Input and output operation is carried out correctly.	Mizanur Rahman	Osakabe												
		Actual	Data input and output has conducted reguraly and smoothly.	Mizanur Rahman	Osakabe												
5-2	**Prepare proposal for financial plan**																
5-2-1	Analyze the data	Plan	Incorporate the SWMexpenditure with revenue	Mizanur Rahman	Osakabe												
		Actual	The expenditures and revenue are incorpoarted and reported regularly.	Mizanur Rahman	Osakabe												
5-2-2	Analyze annual activity plans	Plan	Prepare Annual Plan of activities of 2010-11	Mizanur Rahman	Osakabe												
		Actual	Annual activity plan was prepared.	Mizanur Rahman	Osakabe												
5-2-3	Prepare draft proposal	Plan	Prepare draft proposal when necessary	Mizanur Rahman	Osakabe												
		Actual	Draft annual budget of FY 2010/11 was prepared	Mizanur Rahman	Osakabe												
5-3	**To Improve Procurement and Payment Process**																
5-3-1	To analyse the existing process and identify the problems in disbursment of community SWM budget	Plan	Collect adequate information about procurement and payment process	Belal Hossain Mizanur Rahman	Osakabe, Hara												
		Actual	No adequate budgeting and execution system was found.	Belal Hossain Mizanur Rahman	Osakabe, Hara												
5-3-2	To find solutions	Plan	Prepare proposal to improve existing process	Belal Hossain Mizanur Rahman	Osakabe, Hara												
		Actual	Zone level budgeting started from 2010/11 budgeting.	Belal Hossain Mizanur Rahman	Osakabe, Hara												
5-3-3	To Propose improvement	Plan	Consistant procurement and paymen process	Belal Hossain Mizanur Rahman	Osakabe, Hara												
		Actual	Distribution and disbursement of commnity SWM budget allocated by DCC is under discussion in WMD budget committee.	Belal Hossain Mizanur Rahman	Osakabe, Hara												

Appendix 3 Records of Inputs

Appendix 3-1 Records of Inputs by JICA

a. Dispatch of JICA Experts

Project 1st FY

(As of Jul. 23 2010)

Expert Name	Expertise		Duration	days	Man-Month	Man-Month	Personnel Cost
Naoki Hara	Chief advisor / Institutional setup	Planned			3.40	0.2	
		Actual	Feb, 23 2007 - Jun, 4 2007	102	3.40	0.2	
Mahmoud Riad	Deputy chief advisor / Solid waste management	Planned			1.30	0.0	
		Actual	Apr, 2 2007 - May, 10 2007	39	1.30	0.0	
Junko Okamoto	Community participation/ Communication	Planned			2.23	0.0	
		Actual	Feb, 23 2007 - April, 30 2007	67	2.23	0.0	
Hiroshi Abe	Final disposal management	Planned			0.70	0.0	
		Actual	Apr, 5 2007 - Apr, 25 2007	21	0.70	0.0	
Masahiro Saito	Training for O&M of final disposal site	Planned			2.00	0.0	
		Actual	Mar, 25 2007 - May, 23 2007	60	2.00	0.0	
Masaharu Takasugi	Waste collection vehicle and equipment maintenance	Planned			0.30	0.0	
		Actual	Apr, 5 2007 - Apr, 13 2007	9	0.30	0.0	
Noboru Osakabe	Financial management	Planned			0.50	0.0	
		Actual	May, 1 2007 - May, 15 2007	15	0.50	0.0	
Total		Planned			10.43	0.2	¥8,562,000
		Actual			10.43	0.2	¥8,562,000

*Planned MM and Cost is based on the Contract in the beginning of FY

Project 2nd FY

Expert Name	Expertise		Duration	days	Man-Month	Man-Month	Personnel Cost
Naoki Hara	Chief advisor / Institutional setup	Planned		75	2.50	0.00	
		Actual	Jul, 15 2007 - Aug, 17 2007	34	1.10	0.00	
			Dec, 14 2007 - Dec, 25 2007	12	0.40		
			Feb, 6 2008 - Mar, 18 2008	38	1.30		
Mahmoud Riad	Deputy chief advisor / Solid waste management	Planned		90	3.00	0.00	
		Actual	Sep, 6 2007 - Oct, 30 2007	55	1.80	0.00	
			Jan, 6 2008 - Feb, 14 2008	35	1.20		
Junko Okamoto	Community participation/ Communication	Planned		105	3.50	0.00	
		Actual	Jul, 19 2007 - Aug, 17 2007	30	1.00	0.00	
			Oct, 20 2007 - Nov, 18 2007	30	1.00		
			Dec, 30 2007 - Jan, 16 2008	18	0.60		
			Feb, 17 2008 - Mar, 14 2008	27	0.90		
Akio Ishii	Collection and Transport	Planned		81	2.70	0.00	
		Actual	Jul, 25 2007 - Sep, 22 2007	60	2.00	0.00	
			Jan, 6 2008 - Mar, 5 2008	60	2.00		
Hiroshi Abe	Final disposal management	Planned		51	1.70	0.00	
		Actual	Jul, 17 2008 - Aug, 15 2007	30	1.00	0.00	
			Nov, 12 2007 - Dec, 1 2007	20	0.70		
Masahiro Saito	Training for O&M of final disposal site	Planned		54	1.80	0.00	
		Actual	Sep, 13 2007 - Oct, 9 2007	27	0.90	0.00	
			Feb, 18 2008 - Mar, 15 2008	27	0.90		
Masaharu Takasugi	Waste collection vehicle and equipment maintenance	Planned		84	2.80	0.00	
		Actual	Aug, 5 2007 - Sep, 3 2007	30	1.00	0.00	
			Dec, 31 2007 - Feb, 22 2008	54	1.80		
Noboru Osakabe	Financial management	Planned		48	1.60	0.00	
		Actual	Sep, 2 2007 - Sep, 22 2007	21	0.70	0.00	
			Dec, 10 2007 - Jan, 5 2008	27	0.90		
Total		Planned			19.60	0.00	¥14,652,000
		Actual			21.20	0.00	¥15,900,000

*Planned MM and Cost is based on the Contract in the beginning of FY

Project 3rd FY

Expert Name	Expertise		Duration	days	Man-Month	Man-Month	Personnel Cost
Naoki Hara	Chief advisor / Institutional setup	Planned		84	2.8	0.00	
		Actual	Jul, 10 2008 - Aug, 15 2008	37	1.2	0.00	
			Nov, 4 2008 - Dec, 20 2008	47	1.6		
Mahmoud Riad	Deputy chief advisor / Solid waste management	Planned		195	6.5	0.00	
		Actual	May, 18 2008 - Jul, 1 2008	45	1.5	0.00	
			Aug, 17 2008 - Nov, 14 2008	90	3.0		
			Jan, 13 2009 - Mar, 15 2008	62	2.1		
Junko Okamoto	Community participation I/ Communication	Planned		81	2.7	0.00	
		Actual	Jul, 3 2008 - Jul, 29 2008	27	0.9	0.00	
			Oct, 11 2008 - Nov, 10 2008	31	1.0		
			Jan, 22 2009 - Feb, 13 2009	23	0.8		
Akio Ishii	Collection and Transport/ Public Relations I	Planned		120	4.0	0.00	
		Actual	Jul, 3 2008 - Aug, 11 2008	30	1.0	0.00	
			Oct, 11 2008 - Nov, 24 2008	45	1.5		
			Jan, 30 2009 - Mar, 15 2009	45	1.5		
Ko Takeuchi	Community participation II/ Public relations II	Planned		108	3.6	0.00	
		Actual	Jul, 18 2008 - Sep, 15 2008	60	2.0	0.00	
			Dec, 16 2009 - Feb, 13 2009	48	1.6		
Masahiro Saito	Training for O&M of final disposal site	Planned		120	4.0	0.00	
		Actual	May, 18 2008 - Jul, 16 2008	30	1.0	0.00	
			Aug, 1 2008 - Sep, 14 2008	45	1.5		
			Jan, 29 2009 - Mar, 14 2009	45	1.5		
Masaharu Takasugi	Waste collection vehicle and equipment maintenance	Planned		54	1.8	0.00	
		Actual	Oct, 11 2008 - Nov, 6 2008	27	0.9	0.00	
			Dec, 10 2008 - Jan, 5 2009	27	0.9		
Noboru Osakabe	Financial management	Planned		51	1.7	0.00	
		Actual	Aug, 19 2008 - Sep, 2 2008	15	0.5	0.00	
			Feb, 13 2009 - Mar, 18 2009	34	1.1		
Total		Planned			27.10	0.00	¥19,113,000
		Actual			27.10	0.00	¥19,113,000

*Planned MM and Cost is based on the Contract in the beginning of FY

Project 4th FY

Expert Name	Expertise		Duration	days	Man-Month	Man-Month	Personnel Cost
Naoki Hara	Chief advisor / Institutional setup	Planned		141	4.70	0.00	
		Actual	Jun, 2 2009 Jul, 4 2009	33	1.10	0.00	
			Aug, 14 2009 Sep, 19 2009	37	1.20		
			Nov, 15 2009 - Dec, 25 2009	41	1.40		
			Feb, 20 2010 - Mar, 21 2010	30	1.00		
Mahmoud Riad	Deputy chief advisor / Solid waste management	Planned		120	4.00	0.00	
		Actual	Jul, 14 2009 - Aug, 28 2009	45	1.50	0.00	
			Dec, 14 2009 - Jan, 12 2010	30	1.00		
Junko Okamoto	Community participation I/ Communication	Planned		110	3.67	0.00	
		Actual	Jun, 2 2009 - Jun, 30 2009	29	1.00	0.00	
			Oct, 18 2009 - Dec, 1 2009	45	1.50		
			Feb, 4 2010 - Mar, 11 2010	36	1.20		
Akio Ishii	Collection and Transport/ Public Relations I	Planned		120	4.00	0.00	
		Actual	Jun, 16 2009 - Jul, 22 2009	37	1.20	0.00	
			Sep, 25 2009 - Nov, 13 2009	50	1.70		
			Jan, 5 2010 - Mar, 21 2010	76	2.50		
Ko Takeuchi	Community participation II/ Public relations II	Planned		76	2.53	0.00	
		Actual	Oct, 16 2009 - Nov, 27 2009	43	1.40	0.00	
			Dec, 25 2009 - Jan, 26 2010	33	1.10		
Masahiro Saito	Training for O&M of final disposal site	Planned		90	3.00	0.00	
		Actual	Jun, 2 2009 - Jun, 27 2009	26	0.90	0.00	
			Oct, 1 2009 - Oct, 30 2009	30	1.00		
			Feb, 16 2010 - Mar, 21 2010	34	1.10		
Masaharu Takasugi	Waste collection vehicle and equipment maintenance	Planned		27	0.90	0.00	
		Actual	Jul, 18 2009 - Aug, 13 2009	27	0.90	0.00	
Noboru Osakabe	Financial management	Planned		51	1.70	0.00	
		Actual	Aug, 3 2009 - Aug, 26 2009	24	0.80	0.00	
			Jan, 16 2010 - Feb, 13 2010	29	1.00		
Takatoshi Arai	Collection Vehicle Operation Planning	Planned		90	3.00	0.00	
		Actual	Aug, 8 2009 - Sep, 24 2009	44	1.50	0.00	
			Nov, 7 2009 - Dec, 22 2009	46	1.50		
Total		Planned			27.50	0.00	¥20,581,000
		Actual			27.50	0.00	¥20,581,000

*Planned MM and Cost is based on the Contract in the beginning of FY

Project 5th FY

Expert Name	Expertise		Duration	days	Man-Month	Man-Month	Personnel Cost
Naoki Hara	Chief advisor / Institutional setup	Planed		148	4.93	0.00	
		Actual	May, 18 2010 - Jun,16 2010	30	1.00	0.00	
			Aug, 11 2010 - Aug, 29 2010	19	0.63	0.00	
			Oct, 8 2010 - Oct, 28 2010	21	0.70	0.00	
			Nov, 26 2010 - Dec, 24 2010	29	0.97	0.00	
			Jan, 7 2011 - Feb, 25 2011	45	1.50	0.00	
Mahmoud Riad	Deputy chief advisor / Solid waste management	Planned		105	3.50	0.00	
		Actual	Jun, 9 2010 - Jul, 7 2010	29	0.97	0.00	
			Aug, 30 2010 - Oct, 5 2010	37	1.23	0.00	
			Nov, 3 2010 - Nov, 30 2010	28	0.93	0.00	
Junko Okamoto	Community participation I/ Communication	Planned	2010	95	3.17	0.00	
		Actual	May, 12 2010 - Jun, 20 2010	40	1.33	0.00	
			Feb, 6 2011 - Feb, 20 2011	15	0.50	0.00	
Akio Ishii	Collection and Transport/ Public Relations I	Planned		96	3.20	0.00	
		Actual	May, 12 2010 - Jun, 19 2010	39	1.30	0.00	
			Jul, 3 2010 - Jul, 20 2010	18	0.60	0.00	
			Aug, 9 2010 - Oct, 5 2010	58	1.93	0.00	
			Jan, 7 2011 - Jan, 10 2011	4	0.13	0.00	
			Feb, 12 2011 - Feb, 20 2011	9	0.30	0.00	
Ko Takeuchi	Community participation II/ Public relations II	Planned		89	2.97	0.00	
		Actual	Jun, 15 2010 - Jun, 26 2010	12	0.40	0.00	
			Aug, 22 2010 - Sep, 30 2010	40	1.33	0.00	
			Nov, 27 2010 - Jan, 7 2011	42	1.40	0.00	
Masahiro Saito	Training for O&M of final disposal site	Planned		93	3.10	0.00	
		Actual	May, 21 2010 - Jun, 19 2010	30	1.00	0.00	
			Aug, 5 2010 - Aug, 28 2010	24	0.80	0.00	
			Nov, 22 2010 - Dec, 15 2010	24	0.80	0.00	
			Feb, 6 2011 - Feb, 20 2011	15	0.50	0.00	
Noboru Osakabe	Financial management	Planned		48	1.60	0.00	
		Actual	Aug, 8 2010 - Aug, 21 2010	14	0.47	0.00	
			Nov, 22 2010 - Dec, 25 2010	34	1.13	0.00	
Takatoshi Arai	Collection Vehicle Operation Planning	Planned		78	2.60	0.00	
		Actual	Jun,22 2010 - Aug, 4 2010	44	1.47	0.00	
			Aug, 22 2010 - Sep, 11 2010	21	0.70	0.00	
			Oct, 11 2010 - Nov, 17 2010	38	1.27	0.00	
Total		Planned		752	25.07	0.00	¥18,591,000
		Actual		759	25.30	0.00	¥18,577,300

*Planned MM and Cost is based on the Contract in the beginning of FY

b. Records of Counterpart Training in Japan and Third Countries

1) Group Training Courses in Japan and their Participants

	Name of the Training	Duration	Number of Participants	Participants Name/Post/Organization
1	Seminar on Comprehensive Solid Waste Management	May to July 2007	1	Mr. Md. Towhid Siraj, Asst. Engr, DCC
2	Comprehensive Waste Manageemnt Technique II	May 8, 2007 to August 05, 2007	1	Mr. Mohammad Bengir Ahmed, CI, DCC
3	Promotion of Enabling Environment for Civil Society and Community Development	Oct 14 to Nov 18,2007	2	1) Mr. Md. Asaduzzaman, CSI, DCC 2) Mr. Md. Shafiqul Islam, CI, DCC
4	Solid Waste Management for South West Asia- Discussion for relating the Improving Measures	October – December, 2007	1	Md. Shafiullah Siddique Bhuyian, Asst. Engr, DCC
5	Combat Global Warming Through Achievement of Environment	Feb 24 to Mar 06,2008	2	1) Mr. Md. Farukh Aziz, Superintending Engr, DCC 2) Ms. Kazi Hasiba Jahan, Geographer, DCC
6	Comprehensive Waste Management Technique	May 13 to Aug 10, 2008	2	1) Mr. Md. Wahiduzzaman Chowdhary, CI, DCC 2) Mr. Md. Rokib Hasan, CI, DCC
7	Seminar on comprehensive SWM System	May 13 to Jul 02, 2008	2	1) Mr. A.H.M. Abdullah Harun, SAE, DCC 2) Mr. Aminur Rahman Biswas, CI, DCC
8	Occupational and Environmental Health Management		2	1) Dr. Sanjida Islam, Assistant Health Officer, DCC 2) Dr. Md. Emdadul Haque,Assistant Health Officer, DCC
9	Young Leaders	Feb 25 to Mar 13, 2008	2	1) Mr. Md. Monwar Hossain, Assistant Secretary, DCC 2) Ms. Sazeda Sultana Sima, Research Officer DCC
10	Environmental Managemnet and Pollution Control for South west Asia	Sep. 25 to Dec. 23, 2008	1	Mr. Maksud Alam, Assistant Engineer, Dhaka City Corpoation
11	Solid Waste Management for Southwest Asia-Discussion for Realizing the Improvement Measures-	Oct. 13 2008 to Dec. 5 2008	1	Ms. Afsana Akhter Assistant Chief, Dhaka City Corporation
12	Waste Management and 3Rs Policy	Nov10-Dec06,2008	2	1) Mr. Md. Monowar Hossain, CO,DCC 2) Mr. Md. Oliullah, Senior Assistant Secretary
13	Seminar on Comprehensive Solid Waste Management	May 12 to July 01,09		Cancelled for late submission
14	Waste Management Technique and Environmental Education	June 22 - Sept 11, 2009	1	Mr. Md. Shah kamal, Conservancy Inspector, Dhaka City Corporation
15	Comprehensive Waste Management Technique	Aug 11 to Nov 08,2009	1	Mr. Mohammad Shahidul Islam, Conservancy Inspector, Dhaka City Corporation
16	Combat Global Warming through the Achievement of Environment	Sep 07 to Sep 15,09	2	1) Mr. Tariq Bin Yousuf, Project Director, Dhaka City Corporaton 2) Mr. Mir Mustafizur Rahman, Health officer, Dhaka City Corporation
17	Emvironmental Administration with Community Participation	Sep 27 to Nov 07,09	1	Dr. Nishat Parveen, Deputy Director, Assistant Health Officer, Dhaka City Corporation
18	Solid Waste Management for Southwest Asia-Discussion for Realizing the Improvement Measure	Oct 04 to Nov 27, 2009	2	1)Mr. Md. Mizanur Rahman, Waste Management Officer, Dhaka City Corporation 2) Mr. Md. Abu Jafar, Conservancy Inspetor, Dhaka City Corporation
19	Solid Waste Management by Local Government(A)	Aug 22 to Oct 16,10	1	Mr. Bikas Chandra Das, Conservancy Inspector, Dhaka City Corporation
20	Comprehensive Waste Management Technique	25 Aug to 21 Nov, 10		Pipeline
21	Waste management Technique and Environmental Education(B)	30 Jan to 30 Apr, 10		Upcoming
	Total		27	

2) Participants who participated the individual counterparts training in Japan

2nd JFY:
December 4-15, 2007

No.	Name	Designation
1	Md. Alauddin	Chief Executive Officer, DCC (CEO)
2	Col. Md. Ashfakul Islam	Chief Engineer, DCC
3	Comd. Md. Maksud R Chowdhury	Chief Waste Management Officer (CWMO)

3rd JFY:
November 16-29, 2008

No.	Name	Designation
1	Lt. Col. Shameen Ahamed	Superintending Engineer (Mechanical), Engineering Dept.
2	Dr. Tariq Bin Yousuf	Project Director for Landfill Improvement, WMD

5th JFY:
August 29-September 5, 2010

No.	Name	Designation
1	Md. Abul Kalam Azad	Chief Executive Officer, DCC (CEO)
2	Captain Bipan Kumar Saha	Chief Waste Management Officer, DCC (CWMO)
3	Khandaker Millatul Islam	Manager (Transport), Transport Dept, DCC

3) The third country training and their participants

2nd JFY
Study Tour in India (January 20-25, 2008)

No.	Name	Designation
1	Md. Shehab Ullah	Superintending Engineer, Waste Management Division
2	Md. Shah Kamal	Conservancy Inspector of Zone 3
3	Maksud Alam	Assistant Manager, Mohakhali Bus Terminal
4	Md. Ekramul Hoque Khondoker	Forman, Mech-1, Engineering Dept.
5	Golam Morshed	Assistant Transport Supervisor, Transport Dept.
6	Abu Tahir	Conservancy Inspector of Zone 1
7	Md. Gaddafee Hossain	Conservancy Inspector of Zone 9
8	Md. Mizanur Rahman	Iernal Audit Dept.

3rd JFY
Study Tour in Vietnam (September 7-12, 2008)

No.	Name	Designation
1	Md. Alauddin	Chief Executive Officer, Dhaka City Corporation

2	Md. Abdus Satter	Manager of Transport, Transport Department
3	Md. Mofizur Rahman Bhuiyan	Conservancy Officer Zone 6, Waste Management Department
4	Md. Siddiqur Rahman	Assistant Engineer, Mechanical Division 2, Engineering Department
5	Mr. Mozibor Rahman	Assistant Secretary, Establishment Department
6	Mr. Ko Takeuchi	JICA Expert Team in charge of Project Administration/Community Participation/Public Relations

c. List of Equipment Provided

No.		JFY	Quantity	form	Price(BDT)	Price(¥)	Location of Use	Status of Use
1	Desktop Computer (1)	JFY 2006	1		BDT 73,000	¥128,772	JICA Expert Team Office	In use
	Desktop Computer (2)		1		BDT 61,000	¥107,604	JICA Expert Team Office	Monitor requires spare parts
	Desktop Computer (3)		1		BDT 61,000	¥107,604	JICA Expert Team Office	In use
	Desktop Computer (4)		1		BDT 61,000	¥107,604	JICA Expert Team Office	In use
	Desktop Computer (5)		1		BDT 61,000	¥107,604	JICA Expert Team Office	In use
	Application software (1)		1		BDT 26,000	¥45,864	JICA Expert Team Office	In use
	Application software (2)		1		BDT 26,000	¥45,864	JICA Expert Team Office	In use
	Application software (3)		1		BDT 26,000	¥45,864	JICA Expert Team Office	In use
	Application software (4)		1		BDT 26,000	¥45,864	JICA Expert Team Office	In use
	Application software (5)		1		BDT 26,000	¥45,864	JICA Expert Team Office	In use
	Application software (6)		1		BDT 26,000	¥45,864	JICA Expert Team Office	In use
	Antivirus software (1)		1		BDT 4,700	¥8,291	JICA Expert Team Office	In use
	Antivirus software (2)		1		BDT 4,700	¥8,291	JICA Expert Team Office	In use
	Antivirus software (3)		1		BDT 4,700	¥8,291	JICA Expert Team Office	In use
	Antivirus software (4)		1		BDT 4,700	¥8,291	JICA Expert Team Office	In use
	Antivirus software (5)		1		BDT 4,700	¥8,291	JICA Expert Team Office	In use
	Antivirus software (6)		1		BDT 4,700	¥8,291	JICA Expert Team Office	In use
	Laser Printer (1)		1		BDT 34,000	¥59,976	JICA Expert Team Office	In use
	Fax/Phone		1		BDT 8,000	¥14,112	JICA Expert Team Office	In use
	Multimedia projector		1		BDT 84,500	¥149,058		Broken
	Laptop computer (1)		1		BDT 92,500	¥163,170	JICA Expert Team Office	In use
	Digital DVD camera		1		BDT 52,990	¥93,474	JICA Expert Team Office	In use
	Printer		1		BDT 20,000	¥35,280	JICA Expert Team Office	In use
	Scanner		1		BDT 34,500	¥60,858	JICA Expert Team Office	In use
	Digital camera		1		BDT 29,340	¥51,756		Broken
	Memory card		1		BDT 1,100	¥1,940	JICA Expert Team Office	Not in use
	UPS		1		BDT 5,500	¥9,702	JICA Expert Team Office	In use
	Planned Estimate Cost					**¥1,231,000**		
	Actual Sub-total				**BDT 863,630**	**¥1,523,443**		
2	GIS software	JFY 2007	1		BDT 214,000	¥383,702	JICA Expert Team Office	In use
	GPS unit (1)		1			¥20,096	JICA Expert Team Office	In use
	GPS unit (2)		1			¥20,096	JICA Expert Team Office	In use
	Accounting software		1		BDT 128,637	¥230,646	JICA Expert Team Office	In use
	Gas measure (O2, HsS)		1			¥265,345	Matuail Landfill	In use
	Gas measure equipment (Methane)		1			¥103,500	Matuail Landfill	In use
	Water quality measure equipment (electric conductivity)		1			¥22,500	Matuail Landfill	In use
	Water quality measure equipment (pH)		1			¥32,900	Matuail Landfill	In use
	Planned Estimate Cost					**¥1,171,000**		
	Actual Sub-total				**BDT 342,637**	**¥1,078,784**		
3	Steel plate	JFY 2008	50		BDT 48,597	¥3,569,464	Matuail Landfill	In use
	Speed bump		1		BDT 24,584	¥36,114	Matuail Landfill	In use
	Warning sign billboard		1		BDT 20,800	¥30,555	Matuail Landfill	In use
	Crane hook		2		BDT 1,800	¥5,288	Matuail Landfill	In use
	Steel wire		2		BDT 2,255	¥6,625	Matuail Landfill	In use
	Steel Bar		2		BDT 1,355	¥3,981	Matuail Landfill	In use
	Planned Estimate Cost					**¥3,919,000**		
	Actual Sub-total				**BDT 99,391**	**¥3,648,047**		
4	Steel plate	JFY 2009	50		BDT 25,300	¥1,817,805	Matuail Landfill	In use
	Steel plate		25		BDT 28,500	¥1,023,863	Matuail Landfill	In use
	Laser Printer (2)		1		BDT 85,000	¥122,145	JICA Expert Team Office	In use
	Desktop Computer (6)		1		BDT 75,000	¥107,775	JICA Expert Team Office	In use
	Laptop computer (2)		1		BDT 88,500	¥127,175	JICA Expert Team Office	In use
	Laptop computer (3)		1		BDT 88,500	¥127,175	JICA Expert Team Office	In use
	Application software (7)		1		Included in PC		JICA Expert Team Office	In use
	Application software (8)		1		Included in PC		JICA Expert Team Office	In use
	Application software (9)		1		Included in PC		JICA Expert Team Office	In use
	Multimedia projector		1		BDT 74,000	¥106,338	JICA Expert Team Office	In use
	Digital Camera		1		BDT 13,500	¥19,400	JICA Expert Team Office	In use
	Laser Printer (3)		1		BDT 59,500	¥85,502	JICA Expert Team Office	In use
	Copy Machine		1		BDT 169,500	¥243,572	JICA Expert Team Office	In use
	Planned Estimate Cost					**¥3,739,000**		
	Actual Sub-total				**BDT 707,300**	**¥3,780,747**		
	Planned Estimate Cost Total					**¥10,060,000**		
	Actual Total				**BDT 2,012,958**	**¥10,031,021**		

* Shaded items are discarded items

d. Operation Cost borne by JICA

items	FY2006	FY2007	FY2008	FY2009	FY2010	Total
	Feb. 2007 - June. 2007	July. 2007 - Mar. 2007	May. 2008 - Sep. 2008	May. 2009 - Mar. 2010	May. 2010 - Feb. 2011	
	Yen	Yen	Yen	Yen	Yen	
Labor Cost	1,169,558	3,829,942	6,337,371	6,844,990	4,755,914	22,937,775
Vehicle Rental	274,623	776,712	967,045	729,214	456,186	3,203,780
Project Car Maintenance	0	343,744	215,668	331,364	474,562	1,365,338
Fuel	325,333	1,099,992	1,831,537	2,472,400	878,955	6,608,217
Documentation (printing, translation, etc.)	431,409	2,784,431	5,445,465	2,608,275	1,181,020	12,450,601
Workshop & Seminars	218,840	2,335,202	2,721,252	1,992,322	1,062,378	8,329,994
Total	2,419,763	11,170,023	17,518,338	14,978,565	8,809,016	54,895,705

* Local currency is converted to Yen according to JICA rate of the month of the expense
**Expenses in Previous FY is shown up to end of December, 2010

Appendix 3-2 Inputs by DCC

a. List of Counterpart Personnel

1st FY

Sl. No.	Name	Designation	Remarks
Management and Coordination Group			
1	Commander Maksud Chowdhury	Chief Conservancy Officer, DCC	
2	Dr. Tariq Bin Yousuf	Executive Engineer, Engineering Division, Zone-5, DCC Deputed to Executive Engineer (Implementation & Monitoring), WMD, DCC	Also working for Landfill Group
3	Mohammad Towhid Siraj	Assistant Engineer, Environment Circle, DCC In Addition DUTP & WMD, DCC	Engaged in Landfill Group
4	Abul Hasnat Md. Ashraful Alam	Assistant Engineer, Mechanical Division-1, DCC Deputed to Assistant Engineer, Waste Management Division, DCC	
5	Md. Faridul Islam	Sub-Assistant Engineer, Environment Circle, DCC In Addition DUTP & WMD, DCC	Engaged in Landfill Group
Community SWM Group			
1	Khandaker Millatul Islam	Manager (Transport), Transport Department, DCC	
2	Md. Mofizur Rahman Bhuyan	Conservancy Officer, Zone-6, DCC	
3	Md. Asaduzzman	Conservancy Supervising Inspector, Zone-9, Conservancy Dept., DCC	
4	Md. Asgar	Conservancy Supervising Inspector, Zone-3, Conservancy Dept., DCC	
5	Md. Mohsin	Conservancy Supervising Inspector, Zone-5, Conservancy Dept., DCC	
6	Md. Shahidul Islam	Conservancy Inspector, Zone-3, Conservancy Dept., DCC	
7	Md. Benazir Ahmed	Conservancy Inspector, Zone-8, Conservancy Dept., DCC	
8	Md. Shafiqul Islam	Conservancy Inspector, Zone-4, Conservancy Dept., DCC	
9	Abdul Motaleb	Conservancy Inspector, Zone-4, Conservancy Dept., DCC	
10	Md. Abu Taher	Conservancy Inspector, Zone-1, Conservancy Dept., DCC	
11	Md. Abu Zafar	Conservancy Inspector, Zone-5, Conservancy Dept., DCC	
12	Md. Abdul Awal Patowary	Conservancy Inspector, Zone-6, Conservancy Dept., DCC	
13	Md. Moniruzzaman Chowdhury	Conservancy Supervising Inspector, Zone-9, Conservancy Dept., DCC	
Collection and Transportation Group			
1	A S M Main Uddin	Executive Engineer, Environment Circle, DCC	
2	Rajib Khadem	Assistant Engineer, Zone-4, DCC In Addition Assistant Engineer WMD, DCC	Also working for Landfill Group
3	Md. Shafiullah Siddique Bhuyian	Assistant Engineer, Zone-1 Deputed to Zone-5, DCC	
4	Md. Mahabub Alam	Assistant Manager, Saidabad Bus Terminal, DCC In Addition Assistant Engineer, WMD, DCC	Also working for Landfill Group
5	Maksud Alam	Asst. Manager, Mohakhali Bus Terminal, DCC	
6	A H M Abdulla Harun	Sub-Assistant Engineer, Environment Circle, DCC In Addition DUTP & WMD, DCC	Engaged in Landfill Group
7	Aminur Rahman Biswas	Conservancy Inspector, Zone-6, Conservancy Dept., DCC	

Sl. No.	Name	Designation	Remarks
8	Golam Marshed	Asst. Transport Supervisor, Transport Department, DCC	
9	Faruque Ahmed	Account Assistant, Transport Supervisor In charge, Transport Dept. DCC.	
10	Mamun Uddin Ahmed	Asst. Transport Supervisor, Transport Department, DCC	
11	Siddiqur Rahman	Inspector, Mechanical Division-1, DCC	
12	Habib Mohammed Al-Ahasan	Conservancy Inspector, Zone-4, Conservancy Dept., DCC	
13	Dilbahar Ahmed	Research Officer, Urban Planning Department, DCC	
14	Kazi Hasiba Jahan	Geographer, Urban Planning Department, DCC	
15	Ekramul Haque Khandker	Forman, Mech.-1, DCC	
16	Md. Nuruzzaman	Forman, Mech.-2, DCC	
17	Rakib Ahmed	Sub-Asst. Engineer (Mech. & Elect.), Store & Purchase Department, DCC	
Landfill Management Group			
1	Dr. Tariq Bin Yousuf	Project Director, Landfill Improvement Project, Waste Management Division, DCC	
2	Md. Mahabub Alam	Assistant Manager, Saidabad Bus Terminal, DCC	
3	Rajib Khadem	Assistant Engineer, Zone-4, DCC In Addition Landfill Management	
4	Md. Abu Tahir	Conservancy Inspector, Zone-1, Conservancy Dept., DCC	
5	Sheik Aminul Basher	Conservancy Inspector, Zone-1, Conservancy Dept., DCC	
6	Md. Asadul Islam	Conservancy Inspector, Zone-3, Conservancy Dept., DCC	
7	Md. Rezaul Karim	Conservancy Inspector, Zone-4, Conservancy Dept., DCC	
8	Md. Gaddafee Hossain	Conservancy Inspector, Zone-9, Conservancy Dept., DCC	
9	Md. Masud Ahmed	Conservancy Inspector, Zone-9 Conservancy Dept., DCC	
10	Md. Asif Hossain	Conservancy Inspector, Zone-10 Conservancy Dept., DCC	
11	Md. Rafuqul Islam Chow	Conservancy Inspector, Nagar Bhaban, Conservancy Dept., DCC	
12	Md. Abdul Aziz	Computer Operator, DUTP, DCC	
13	Rokeya Akther	Computer Operator, DUTP, DCC	
14	Md. Azim Ali Khan	Computer Operator, DUTP, DCC	
15	Md. Rabiul Alam Chowdhury	Office Assistant, DUTP, DCC	
16	Md. Afzalul Azam Reza	Assistant Social Welfare Officer in Addition Administrative Officer, WMD, DCC	
17	Atiqur Rahman	Lineman, Electrical, Zone-5, DCC	
18	Md. Alamgir Hossain	Mechanics, Mechanical Division-2, DCC	
19	Motiur Islam	Heavy Equipment Operator, Mech. Division-2, DCC	
20	Royal Ahmed	Heavy Equipment Operator, Mech. Division-2, DCC	
21	Salim Khan	Heavy Equipment Operator, Mech. Division-2, DCC	
22	Forhad Hossain	Heavy Equipment Operator, Mech. Division-2, DCC	
23	Rafiqul Islam-2	Heavy Equipment Operator, Mech. Division-2, DCC	

Sl. No.	Name	Designation	Remarks
24	Ranu Miah	Pay-Loader-Driver, Mech. Division-2, DCC	
25	Abdur Rashid	Dumper Driver, Mech. Divi.-2, DCC	
26	Julfiqur Ali	Driver, Mech. Division-2, DCC	
27	Shamsur Rahman	Driver, Mech. Division-2, DCC	
28	Abul Khair	Machine Operator, Mech. Division-2, DCC	
29	Shafi Miah	Machine Operator, Mech. Division-2, DCC	
30	Dewan Nazrul Islam	Machine Operator, Mech. Division-2, DCC	
31	Julhas Uddin	Machine Operator, Mech. Division-2, DCC	
32	Delware Hossain	Machine Operator, Mech. Division-2, DCC	
33	Kazi Zafar Ahmed	Machine Operator, Mech. Division-2, DCC	
34	Kabir Ahmed	Machine Operator, Mech. Division-2, DCC	
35	Md. Rafiq-1	Machine Operator, Mech. Division-2, DCC	
36	Sultan Miah	Machine Operator, Mech. Division-2, DCC	
37	Chan Miah	Machine Operator, Mech. Division-2, DCC	
38	Jakir Hossain	Machine Operator, Mech. Division-2, DCC	
39	Jashim Uddin	Machine Operator, Mech. Division-2, DCC	
40	Md. Nur Shamim	Mechanics, Transport Department, DCC.	
41	Md. Shajahan	Asst. Mechanics, Transport Department, DCC.	
42	Md. Robin	Truck Kully, Conservancy Department, DCC	
43	A K Changis	Truck Kully, Conservancy Department, DCC	
44	Md. Abul Hossain	Truck Kully, Conservancy Department, DCC	
45	Gonesh Das	Truck Kully, Conservancy Department, DCC	
46	Probir Kumar Saha	Truck Kully, Conservancy Department, DCC	
47	M A Shahed	Truck Kully, Conservancy Department, DCC	
48	Din Mohammad	Guard (Ward), DCC	
49	Md. Sohel Rana	Guard (Ward), DCC	
50	Md. Sheik Farid	Guard (Ward), DCC	
51	Md. Aktaruzzaman	Guard (Ward), DCC	
52	Md. Golam Mostafa	Guard (Ward), DCC	
Financial Management Group			
1	Bellal Hossain Mia	Deputy Chief Accounts Officer, Accounts Department, DCC	
2	A.K.M. Mahfuzur Rahman	Assistant Secretary (Administration), DCC	
3	Md. Samir Uddin	UDA cum Accountant, Transport Dept., DCC	
4	Abdul Mallak	Assistant Store & Purchase Officer (Purchase), Store & Purchase Dept. DCC	
5	Md. Abul Kalam	UDA cum Accountant, Mechanical Division-2, DCC	
6	Md. Abdus Sattar Sharker	LDA cum Typist, CCO Office, Conservancy Dept. DCC	
7	Afzalul Azam Reza	Assistant Social Welfare Officer in Addition Administrative Officer, WMD, DCC	
8	Habib Mohammed Al-Hasan	Conservancy Inspector, Zone-4, Conservancy Dept., Ward-, DCC	

2nd FY

Sl. No.	Name	Designation	Remarks
Management and Coordination Group			
1	Commander Maksud R. Chowdhury	Chief Conservancy Officer	Project Manager and Group Leader, (part time, in parallel with conservancy control, beautification program, etc.)
2	Shehab Ullah	Superintending Engineer, Waste Management Division, and Environmental Circle	Project Coordinator and Deputy Group Leader
3	Dr. Tariq Bin Yousuf	Executive Engineer, Engineering Division, Zone-5, Deputed to Executive Engineer (Implementation & Monitoring), Waste Management Division	Also working as Group Leader of Landfill Management Group (full time)
4	Abul Hasnat Md. Ashraful Alam	Assistant Engineer, Mechanical Division-1, Deputed to Assistant Engineer, Waste Management Division	Also working as Group Leader of Collection and Transportation Group (full time)
Community SWM Group			
1	Dewan Md. Shah Alam	Deputy Chief Conservancy Officer	Group Leader (part time, in parallel with conservancy control etc.)
2	Md. Asaduzzman	Conservancy Supervising Inspector, Zone-9	Deputy Group Leader Leader of sub-group (Public Awareness and Environmental Education)
3	Md. Shafiqul Islam	Conservancy Inspector (Ward 33), Zone-4	Leader of Sub-group (Primary Collection) (part time, in parallel with conservancy inspection)
4	Abdul Motaleb	Conservancy Inspector (Ward 36), Zone-4	Leader of Sub-group (Ward SWM) (part time, in parallel with conservancy inspection)
C/P working continuously			
5	Md. Mofizur Rahman Bhuyan	Conservancy Officer, Zone-6	part time, in parallel with conservancy inspection and supervising
6	Md. Asgar	Conservancy Supervising Inspector, Zone-3	
7	Md. Mohashin	Conservancy Supervising Inspector, Zone-5	
8	Md. Shahidul Islam	Conservancy Inspector (Ward 65), Zone-3	
9	Md. Benazir Ahmed	Conservancy Inspector (Ward 6), Zone-8	
10	Md. Abu Taher	Conservancy Inspector (Ward 76), Zone-1	
Newly added upon the request by the Group in March 2007 and continuously working			
11	Mamunur Rahman	Conservancy Inspector (Ward 15), Zone-8, Conservancy Dept., DCC	part time, in parallel with conservancy inspection
12	Rakib Hasan	Conservancy Inspector (Ward 12), Zone-7	
13	Md. Rabiuullah	Conservancy Inspector (Ward 86), Zone-1	
14	Mohammad Farhad Hossain	Conservancy Inspector (Ward 17), Zone-9	
15	Md. Shah Kamal	Conservancy Inspector (Ward 63), Zone-3	
16	Md. Nazib Khan	Conservancy Inspector (Ward 58), Zone-3	
17	Md. Kamrul Hassan	Conservancy Inspector (Ward 69), Zone-2	
Newly appointed by CCO (13 persons)			
18	Md. Iqbal Karim	Conservancy Supervising Inspector, Zone 6	part time, in parallel with conservancy supervising
19	Md. Monowar Hossain	Conservancy Supervising Inspector, Zone 1	
20	Shahab Uddin	Conservancy Supervising Inspector, Zone 10	

Sl. No.	Name	Designation	Remarks
21	Md. Wahiduzzaman Chowdhury	Conservancy Inspector, Zone 5	part time, in parallel with conservancy inspection
22	Radha Gobindo Biswas	Conservancy Inspector, Zone 7	
23	Md. Abu Yunus	Conservancy Inspector, Zone 8	part time, in parallel with conservancy inspection
24	Bikash Chandro Das	Conservancy Inspector, Zone 1	
25	Md. Mowazzem Hossain	Conservancy Inspector, Zone 1	
26	Md. Anwer Hossain	Conservancy Inspector, Zone 1	
27	Md. Hanif Uddin	Conservancy Inspector, Zone 1	
28	Rashedur Rahman Rassel	Conservancy Inspector, Zone 5	
29	Md. Masum Hossain	Conservancy Inspector, Zone 8	
30	Md. Kamrul Hasan	Conservancy Inspector, Zone 2	
Collection and Transportation Group			
1	Abul Hasnat Md. Ashraful Alam	Assistant Engineer, Mechanical Division-1, Engineering Department, Deputed to Assistant Engineer, Waste Management Division	Group Leader (full time)
2	Maruf Hassan	Transport Manager, Transport Dept.	Deputy Group Leader (Vehicle Operation), part time
3	Md. Siddiqur Rahman	Assistant Engineer (in charge) Mechanical Div. Engineering Dept.	Deputy Group Leader (Vehicle Maintenance), part time
4	Rajib Khadem	Assistant Engineer, Zone-4, DCC In Addition Assistant Engineer, Waste Management Division	Also working for Landfill Group (limited time for Collection and Transportation Group)
5	Md. Shafiullah Siddique Bhuyian	Assistant Engineer, Zone-1 Deputed to Zone-5	part time
6	Md. Mahaboob Alam	Assistant Manager, Saidabad Bus Terminal, In Addition Assistant Engineer, Waste Management Division	Also working for Landfill Group (limited time for Collection and Transportation Group)
7	Maksud Alam	Asst. Manager, Mohakhali Bus Terminal, Transport Department	part time
8	Md. Aminur Rahman Biswas	Conservancy Inspector, Zone-6	
9	Golam Marshed	Asst. Transport Supervisor, Transport Department	
10	Faruque Ahmed	Account Assistant, Transport Supervisor In charge, Transport Department	
11	Mamun Uddin Ahmed	Asst. Transport Supervisor, Transport Department	part time
12	Siddiqur Rahman	Inspector, Mechanical Division-1, Engineering Dept.	
11	Habib Mohammed Al-Ahasan	Conservancy Inspector, Zone-4	
12	Dilbahar Ahmed	Research Officer, Urban Planning Department	
13	Kazi Hasiba Jahan	Geographer, Urban Planning Department, Engineering Department	
14	Ekramul Haque Khandker	Forman, Mech.-1, Engineering Department	
15	Md. Nuruzzaman	Forman, Mech.-2, Engineering Department	
16	Rakib Ahmed	Sub-Asst. Engineer (Mech. & Elect.), Store & Purchase Department	
Landfill Management Group			
1	Dr. Tariq Bin Yousuf	Executive Engineer, Engineering Division, Zone-5, Deputed to Executive Engineer (Implementation & Monitoring), Waste Management Division	Group Leader, full time, working as Deputy Group Leader for Management and Coordination Group

Sl. No.	Name	Designation	Remarks
2	Md. Mahaboob Alam	Assistant Manager, Waste Management Division	Deputy Group Leader (Operation), full time, Also working for Collection/Transport Group
3	Mohammad Towhid Siraj	Assistant Engineer, Environment Circle, In Addition DUTP & Waste Management Division	full time
4	Rajib Khadem	Assistant Engineer, Zone-4, In Addition Landfill Management	Also working for Collection/Transport Group, full time
5	A H M Abdulla Harun	Sub-Assistant Engineer, Environment Circle, In Addition DUTP & Waste Management Division	full time
6	Md. Faridul Islam	Sub-Assistant Engineer, Environment Circle, In Addition DUTP & Waste Management Division	full time
7	Md. Abu Tahir	Conservancy Inspector, Zone-1	full time (4hours for half shift)
8	Sheik Aminul Basher	Conservancy Inspector, Zone-1	
9	Md. Asadul Islam	Conservancy Inspector, Zone-3	
10	Md. Rezaul Karim	Conservancy Inspector, Zone-4	
11	Md. Gaddafee Hossain	Conservancy Inspector, Zone-9	
12	Md. Masud Ahmed	Conservancy Inspector, Zone-9	
13	Md. Asif Hossain	Conservancy Inspector, Zone-10	
14	Md. Rafuqul Islam Chow	Conservancy Inspector, Nagar Bhaban	
15	Md. Abdul Aziz	Computer Operator, DUTP	full time
16	Rokeya Akther	Computer Operator, DUTP	
17	Md. Rabiul Alam Chowdhury	Office Assistant, DUTP,	full time
18	Atiqur Rahman	Lineman, Electrical, Zone-5	part time
19	Md. Alamgir Hossain	Mechanics, Mechanical Division-2, Engineering Dept.	
20	Motiur Islam	Heavy Equipment Operator, Mech. Division-2, Engineering Dept.	
21	Royal Ahmed	Heavy Equipment Operator, Mech. Division-2, Engineering Dept.	
22	Salim Khan	Heavy Equipment Operator, Mech. Division-2, Engineering Dept.	
23	Forhad Hossain	Heavy Equipment Operator, Mech. Division-2, Engineering Dept.	
24	Rafiqul Islam-2	Heavy Equipment Operator, Mech. Division-2, Engineering Dept.	
25	Ranu Miah	Pay-Loader-Driver, Mech. Division-2, Engineering Dept.	
26	Abdur Rashid	Dumper Driver, Mech. Division-2, Engineering Dept.	
27	Julfiqur Ali	Driver, Mech. Division-2, Engineering Dept.	
28	Shamsur Rahman	Driver, Mech. Division-2, Engineering Dept.	
29	Abul Khair	Machine Operator, Mech. Division-2, Engineering Dept.	full time
30	Shafi Miah	Machine Operator, Mech. Division-2, Engineering Dept.	
31	Dewan Nazrul Islam	Machine Operator, Mech. Division-2, Engineering Dept.	
32	Julhas Uddin	Machine Operator, Mech. Division-2, Engineering Dept.	
33	Delware Hossain	Machine Operator, Mech. Division-2, Engineering Dept.	
34	Kazi Zafar Ahmed	Machine Operator, Mech. Division-2, Engineering Dept.	

Sl. No.	Name	Designation	Remarks
35	Kabir Ahmed	Machine Operator, Mech. Division-2, Engineering Dept.	
36	Md. Rafiq-1	Machine Operator, Mech. Division-2, Engineering Dept.	
37	Sultan Miah	Machine Operator, Mech. Division-2, Engineering Dept.	
30	Chan Miah	Machine Operator, Mech. Division-2, Engineering Dept.	
39	Jakir Hossain	Machine Operator, Mech. Division-2, Engineering Dept.	
40	Jashim Uddin	Machine Operator, Mech. Division-2, Engineering Dept.	
41	Md. Nur Shamim	Mechanics, Transport Department.	full time
42	Md. Shajahan	Asst. Mechanics, Transport Department	
43	Md. Robin	Truck Kully, Conservancy Department	full time (car wash 8-hours shift)
44	A K Changis	Truck Kully, Conservancy Department	full time (car wash 8-hour shift)
45	Md. Abul Hossain	Truck Kully, Conservancy Department	
46	Gonesh Das	Truck Kully, Conservancy Department	
47	Probir Kumar Saha	Truck Kully, Conservancy Department	
48	M A Shahed	Truck Kully, Conservancy Department	
49	Din Mohammad	Guard (Ward)	full time (8-hours shift)
50	Md. Sohel Rana	Guard (Ward)	
51	Md. Sheik Farid	Guard (Ward)	
52	Md. Aktaruzzaman	Guard (Ward)	
53	Md. Golam Mostafa	Guard (Ward)	
Financial Management Group			
1	Bellal Hossain Mia	Deputy Chief Accounts Officer, Accounts Department	Group Leader (part time)
2	Md. Mizanur Rahman	Internal Audit Department	Deputy Group Leader, almost full time
3	A.K.M. Mahfuzur Rahman	Assistant Secretary (Administration)	part time
4	Md. Samir Uddin	UDA cum Accountant, Transport Dept.	part time
5	Abdul Mallak	Assistant Store & Purchase Officer (Purchase), Store & Purchase Dept.	part time
6	Md. Abul Kalam	UDA cum Accountant, Mechanical Division-2, Engineering Dept.	part time
7	Md. Abdus Sattar Sharker	LDA cum Typist, CCO Office, Conservancy Dept.	part time
8	Afzalul Azam Reza	Assistant Social Welfare Officer in Addition Administrative Officer, Waste Management Division	part time
9	Habib Mohammed Al-Ahasan	Conservancy Inspector, Zone-4	part time

3rd FY

Sl. No.	Name	Designation	Remarks
Management and Coordination Group			
1	Commander Maksud R. Chowdhury	Chief Conservancy Officer	Project Manager and Group Leader, (part time, in parallel with conservancy control, beautification program, etc.)
2	Dr. Tariq Bin Yousuf	Executive Engineer, Engineering Division, Zone-5, Deputed to Executive Engineer (Implementation & Monitoring), Waste Management Division	Deputy Group Leader Also working as Group Leader of Landfill Management Group (full time)
3	Abul Hasnat Md. Ashraful Alam	Assistant Engineer, Mechanical Division-1, Deputed to Assistant Engineer, Waste Management Division	Also working as Group Leader of Collection and Transportation Group (full time)
Community SWM Group			
1	Dewan Md. Shah Alam	Deputy Chief Conservancy Officer	Group Leader (part time, in parallel with conservancy control etc.)
2	Md. Asaduzzman	Conservancy Supervising Inspector, Zone-9	Deputy Group Leader Leader of sub-group (Public Awareness and Environmental Education)
3	Md. Shafiqul Islam	Conservancy Inspector (Ward 33), Zone-4	Leader of Sub-group (Primary Collection) (part time, in parallel with conservancy inspection)
4	Abdul Motaleb	Conservancy Inspector (Ward 36), Zone-4	Leader of Sub-group (Ward SWM) (part time, in parallel with conservancy inspection)
C/P working continuously			
5	Md. Mofizur Rahman Bhuyan	Conservancy Officer, Zone-6	part time, in parallel with conservancy inspection and supervising
6	Md. Asgar	Conservancy Supervising Inspector, Zone-3	
7	Md. Mohashin	Conservancy Supervising Inspector, Zone-5	
8	Md. Shahidul Islam	Conservancy Inspector (Ward 65), Zone-3	
9	Md. Benazir Ahmed	Conservancy Inspector (Ward 6), Zone-8	
10	Md. Abu Taher	Conservancy Inspector (Ward 76), Zone-1	
Newly added upon the request by the Group in March 2007 and continuously working			
11	Mamunur Rahman	Conservancy Inspector (Ward 15), Zone-8, Conservancy Dept., DCC	part time, in parallel with conservancy inspection
12	Rakib Hasan	Conservancy Inspector (Ward 12), Zone-7	
13	Md. Rabiuullah	Conservancy Inspector (Ward 86), Zone-1	part time, in parallel with conservancy inspection
14	Mohammad Farhad Hossain	Conservancy Inspector (Ward 17), Zone-9	
15	Md. Shah Kamal	Conservancy Inspector (Ward 63), Zone-3	
16	Md. Nazib Khan	Conservancy Inspector (Ward 58), Zone-3	
17	Md. Kamrul Hassan	Conservancy Inspector (Ward 69), Zone-2	
Newly appointed by CCO (19 persons)			
18	Md. Iqbal Karim	Conservancy Supervising Inspector, Zone 6	part time, in parallel with conservancy supervising
19	Md. Monwer Hossain	Conservancy Supervising Inspector, Zone 1	
20	Shahab Uddin	Conservancy Supervising Inspector, Zone 10	
21	Md. Wahiduzzaman Chowdhury	Conservancy Inspector, Zone 5	part time, in parallel with conservancy

Sl. No.	Name	Designation	Remarks
22	Radha Gobindo Biswas	Conservancy Inspector, Zone 7	inspection
23	Md. Abu Yusuf	Conservancy Inspector, Zone 8	part time, in parallel with conservancy inspection
24	Bikash Chandro Das	Conservancy Inspector, Zone 1	
25	Md. Mowazzem Hossain	Conservancy Inspector, Zone 1	
26	Md. Anwer Hossain	Conservancy Inspector, Zone 1	
27	Md. Hanif Uddin	Conservancy Inspector, Zone 1	
28	Rashedur Rahman Rassel	Conservancy Inspector, Zone 5	
29	Md. Masum Hossain	Conservancy Inspector, Zone 8	
30	Md. Kamrul Hasan	Conservancy Inspector, Zone 2	
31	Mohammad Shahjahan	Conservancy Inspector. Ward 50, Zone 5 (letter 115/CD, dated 28th Feb., 2008)	
32	Md. Mofizur Rahman Patwary	Conservancy Inspector. Ward 75, Zone 1 (letter 36/CD, dated 7th July, 2008)	
33	M. A . Kuddus	Asst. CWMO, WMD (letter 125/CD, dated 17th July, 2008)	
34	Abdul Hassan Chowdhury	Asst. CWMO, WMD (letter 125/CD, dated 17th July, 2008)	
35	Md. Anisul Huq	Conservancy Officer (in charge), Zone 7 (letter 125/CD, dated 17th July, 2008)	
36	Bashudeb Sarkar	Conservancy Supervising Inspector, Zone 7 (letter 125/CD, dated 17th July, 2008)	
Collection and Transportation Group			
1	Abul Hasnat Md. Ashraful Alam	Assistant Engineer, Mechanical Division-1, Engineering Department, Deputed to Assistant Engineer, Waste Management Division	Group Leader (full time)
2	Maruf Hassan	Transport Manager, Transport Dept.	Deputy Group Leader (Vehicle Operation), part time
3	Md. Siddiqur Rahman	Assistant Engineer (in charge) Mechanical Div. Engineering Dept.	Deputy Group Leader (Vehicle Maintenance), part time
4	Rajib Khadem	Assistant Engineer, Zone-4, DCC In Addition Assistant Engineer, Waste Management Division	Also working for Landfill Group (limited time for Collection and Transportation Group)
5	Md. Shafiullah Siddique Bhuyian	Assistant Engineer, Zone-1 Deputed to Zone-5	part time
6	Md. Mahaboob Alam	Assistant Manager, Saidabad Bus Terminal, In Addition Assistant Engineer, Waste Management Division	Also working for Landfill Group (limited time for Collection and Transportation Group)
7	Maksud Alam	Asst. Manager, Mohakhali Bus Terminal, Transport Department	part time
8	Md. Aminur Rahman Biswas	Conservancy Inspector, Zone-6	
9	Golam Marshed	Asst. Transport Supervisor, Transport Department	
10	Faruque Ahmed	Account Assistant, Transport Supervisor In charge, Transport Department	
11	Mamun Uddin Ahmed	Asst. Transport Supervisor, Transport Department	part time
12	Siddiqur Rahman	Inspector, Mechanical Division-1, Engineering Dept.	
11	Habib Mohammed Al-Ahasan	Conservancy Inspector, Zone-4	
12	Dilbahar Ahmed	Research Officer, Urban Planning Department	
13	Kazi Hasiba Jahan	Geographer, Urban Planning Department, Engineering Department	
14	Ekramul Haque Khandker	Forman, Mech.-1, Engineering Department	

Sl. No.	Name	Designation	Remarks
15	Md. Nuruzzaman	Forman, Mech.-2, Engineering Department	
16	Rakib Ahmed	Sub-Asst. Engineer (Mech. & Elect.), Store & Purchase Department	
Landfill Management Group			
1	Dr. Tariq Bin Yousuf	Executive Engineer, Engineering Division, Zone-5, Deputed to Executive Engineer (Implementation & Monitoring), Waste Management Division	Group Leader, full time, working as Deputy Group Leader for Management and Coordination Group
2	Md. Mahaboob Alam	Assistant Manager, Waste Management Division	Deputy Group Leader (Operation), full time, Also working for Collection/Transport Group
3	Mohammad Towhid Siraj	Assistant Engineer, Environment Circle, In Addition DUTP & Waste Management Division	full time
4	Rajib Khadem	Assistant Engineer, Zone-4, In Addition Landfill Management	Also working for Collection/Transport Group, full time
5	A H M Abdulla Harun	Sub-Assistant Engineer, Environment Circle, In Addition DUTP & Waste Management Division	full time
6	Md. Faridul Islam	Sub-Assistant Engineer, Environment Circle, In Addition DUTP & Waste Management Division	
7	Md. Abu Tahir	Conservancy Inspector, Zone-1	full time (4hours for half shift)
8	Sheik Aminul Basher	Conservancy Inspector, Zone-1	full time (4hours for half shift)
9	Md. Asadul Islam	Conservancy Inspector, Zone-3	
10	Md. Rezaul Karim	Conservancy Inspector, Zone-4	
11	Md. Gaddafee Hossain	Conservancy Inspector, Zone-9	
12	Md. Masud Ahmed	Conservancy Inspector, Zone-9	
13	Md. Asif Hossain	Conservancy Inspector, Zone-10	
14	Md. Rafuqul Islam Chow	Conservancy Inspector, Nagar Bhaban	
15	Md. Abdul Aziz	Computer Operator, DUTP	full time
16	Rokeya Akther	Computer Operator, DUTP	
17	Md. Rabiul Alam Chowdhury	Office Assistant, DUTP,	
18	Atiqur Rahman	Lineman, Electrical, Zone-5	part time
19	Md. Alamgir Hossain	Mechanics, Mechanical Division-2, Engineering Dept.	part time
20	Motiur Islam	Heavy Equipment Operator, Mech. Division-2, Engineering Dept.	full time
21	Royal Ahmed	Heavy Equipment Operator, Mech. Division-2, Engineering Dept.	
22	Salim Khan	Heavy Equipment Operator, Mech. Division-2, Engineering Dept.	
23	Forhad Hossain	Heavy Equipment Operator, Mech. Division-2, Engineering Dept.	
24	Rafiqul Islam-2	Heavy Equipment Operator, Mech. Division-2, Engineering Dept.	
25	Ranu Miah	Pay-Loader-Driver, Mech. Division-2, Engineering Dept.	
26	Abdur Rashid	Dumper Driver, Mech. Division-2, Engineering Dept.	
27	Julfiqur Ali	Driver, Mech. Division-2, Engineering Dept.	
28	Shamsur Rahman	Driver, Mech. Division-2, Engineering Dept.	
29	Abul Khair	Machine Operator, Mech. Division-2, Engineering Dept.	
30	Shafi Miah	Machine Operator, Mech. Division-2, Engineering	

Sl. No.	Name	Designation	Remarks
		Dept.	
31	Dewan Nazrul Islam	Machine Operator, Mech. Division-2, Engineering Dept.	
32	Julhas Uddin	Machine Operator, Mech. Division-2, Engineering Dept.	
33	Delware Hossain	Machine Operator, Mech. Division-2, Engineering Dept.	
34	Kazi Zafar Ahmed	Machine Operator, Mech. Division-2, Engineering Dept.	
35	Kabir Ahmed	Machine Operator, Mech. Division-2, Engineering Dept.	
36	Md. Rafiq-1	Machine Operator, Mech. Division-2, Engineering Dept.	
37	Sultan Miah	Machine Operator, Mech. Division-2, Engineering Dept.	
30	Chan Miah	Machine Operator, Mech. Division-2, Engineering Dept.	
39	Jakir Hossain	Machine Operator, Mech. Division-2, Engineering Dept.	
40	Jashim Uddin	Machine Operator, Mech. Division-2, Engineering Dept.	
41	Md. Nur Shamim	Mechanics, Transport Department.	full time
42	Md. Shajahan	Asst. Mechanics, Transport Department	
43	Md. Robin	Truck Kully, Conservancy Department	full time (car wash 8-hours shift)
44	A K Changis	Truck Kully, Conservancy Department	
45	Md. Abul Hossain	Truck Kully, Conservancy Department	
46	Gonesh Das	Truck Kully, Conservancy Department	
47	Probir Kumar Saha	Truck Kully, Conservancy Department	
48	M A Shahed	Truck Kully, Conservancy Department	
49	Din Mohammad	Guard (Ward)	full time (8-hours shift)
50	Md. Sohel Rana	Guard (Ward)	
51	Md. Sheik Farid	Guard (Ward)	
52	Md. Aktaruzzaman	Guard (Ward)	
53	Md. Golam Mostafa	Guard (Ward)	
Financial Management Group			
1	Bellal Hossain Mia	Deputy Chief Accounts Officer, Accounts Department	Group Leader (part time)
2	Md. Mizanur Rahman	Internal Audit Department	Deputy Group Leader, almost full time
3	A.K.M. Mahfuzur Rahman	Assistant Secretary (Administration)	part time
4	Md. Samir Uddin	UDA cum Accountant, Transport Dept.	
5	Abdul Mallak	Assistant Store & Purchase Officer (Purchase), Store & Purchase Dept.	
6	Md. Abul Kalam	UDA cum Accountant, Mechanical Division-2, Engineering Dept.	
7	Md. Abdus Sattar Sharker	LDA cum Typist, CCO Office, Conservancy Dept.	
8	Afzalul Azam Reza	Assistant Social Welfare Officer in Addition Administrative Officer, Waste Management Division	
9	Habib Mohammed Al-Ahasan	Conservancy Inspector, Zone-4	

4th FY

Sl. No.	Name	Designation	Remarks
Management and Coordination Group			
1	Captain Bipon Kumar Saha	Chief Waste Management Officer (CWMO), WMD	Project Manager and Group Leader, (part time, in parallel with conservancy control, beautification program, etc.)
2	Dr. Tariq Bin Yousuf	Executive Engineer, Engineering Division, Zone-5, Deputed to Project Director of Landfill Improvement Project, WMD	Deputy Group Leader Also working as Group Leader of Landfill Management Group (full time)
3	Abul Hasnat Md. Ashraful Alam	Executive Engineer (Collection and Transport), WMD	Also working as Group Leader of Collection and Transportation Group (full time)
Community SWM Group			
1	Dewan Md. Shah Alam	Additional CWMO, WMD	Group Leader (part time, in parallel with conservancy control etc.)
2	Md. Asaduzzman	Assistant CWMO (Planning), WMD	Deputy Group Leader Leader of sub-group (Public Awareness and Environmental Education)
3	Md. Shafiqul Islam	Waste Management Officer (Community), WMD	Leader of Sub-group (Primary Collection) (part time, in parallel with conservancy inspection)
4	Abdul Motaleb	Conservancy Inspector (Ward 36), Zone-4	Leader of Sub-group (Ward SWM) (part time, in parallel with conservancy inspection)
C/P working continuously			
5	Md. Mofizur Rahman Bhuyan	Conservancy Officer, Zone-6	part time, in parallel with conservancy inspection and supervising
6	Md. Asgar	Conservancy Supervising Inspector, Zone-3	
7	Md. Mohashin	Conservancy Supervising Inspector, Zone-5	
8	Md. Shahidul Islam	Conservancy Inspector (Ward 65), Zone-3	
9	Md. Benazir Ahmed	Conservancy Inspector (Ward 6), Zone-8	
10	Md. Abu Taher	Conservancy Inspector (Ward 76), Zone-1	
Newly added upon the request by the Group in March 2007 and continuously working			
11	Mamunur Rahman	Conservancy Inspector (Ward 15), Zone-8, Conservancy Dept., DCC	part time, in parallel with conservancy inspection
12	Rakib Hasan	Conservancy Inspector (Ward 12), Zone-7	
13	Md. Rabiuullah	Conservancy Inspector (Ward 86), Zone-1	part time, in parallel with conservancy inspection
14	Mohammad Farhad Hossain	Conservancy Inspector (Ward 17), Zone-9	
15	Md. Shah Kamal	Conservancy Inspector (Ward 63), Zone-3	
16	Md. Nazib Khan	Conservancy Inspector (Ward 58), Zone-3	
17	Md. Kamrul Hassan	Conservancy Inspector (Ward 69), Zone-2	
Newly appointed by CCO (19 persons)			
18	Md. Iqbal Karim	Conservancy Supervising Inspector, Zone 6	part time, in parallel with conservancy supervising
19	Md. Monwer Hossain	Conservancy Supervising Inspector, Zone 1	
20	Shahab Uddin	Conservancy Supervising Inspector, Zone 10	
21	Md. Wahiduzzaman	Conservancy Inspector, Zone 5	part time, in parallel

Sl. No.	Name	Designation	Remarks
	Chowdhury		with conservancy inspection
22	Radha Gobindo Biswas	Conservancy Inspector, Zone 7	
23	Md. Abu Yusuf	Conservancy Inspector, Zone 8	part time, in parallel with conservancy inspection
24	Bikash Chandro Das	Conservancy Inspector, Zone 1	
25	Md. Mowazzem Hossain	Conservancy Inspector, Zone 1	
26	Md. Anwer Hossain	Conservancy Inspector, Zone 1	
27	Md. Hanif Uddin	Conservancy Inspector, Zone 1	
28	Rashedur Rahman Rassel	Conservancy Inspector, Zone 5	
29	Md. Masum Hossain	Conservancy Inspector, Zone 8	
30	Md. Kamrul Hasan	Conservancy Inspector, Zone 2	
31	Mohammad Shahjahan	Conservancy Inspector. Ward 50, Zone 5 (letter 115/CD, dated 28th Feb., 2008)	
32	Md. Mofizur Rahman Patwary	Conservancy Inspector. Ward 75, Zone 1 (letter 36/CD, dated 7th July, 2008)	
33	M. A . Kuddus	Asst. CWMO, WMD (letter 125/CD, dated 17th July, 2008)	
34	Abdul Hassan Chowdhury	Asst. CWMO, WMD (letter 125/CD, dated 17th July, 2008)	
35	Md. Anisul Huq	Conservancy Officer (in charge), Zone 7 (letter 125/CD, dated 17th July, 2008)	
36	Bashudeb Sarkar	Conservancy Supervising Inspector, Zone 7 (letter 125/CD, dated 17th July, 2008)	
CI newly transferred to WBA target ward (Replacement of previous CI) (1 person)			
37	Jahirul Islam	Conservancy Supervising Inspector, Zone 6	part time, in parallel with conservancy supervising
Collection and Transportation Group			
1	Abul Hasnat Md. Ashraful Alam	Exective Engineer (Collection and Transportation , Mechanical Division-1, Engineering Department, Deputed to Assistant Engineer, Waste Management Division	Group Leader (full time)
2	Maruf Hassan	Transport Manager, Transport Dept.	Deputy Group Leader (Vehicle Operation), part time
3	Md. Siddiqur Rahman	Assistant Engineer (in charge) Mechanical Div. Engineering Dept.	Deputy Group Leader (Vehicle Maintenance), part time
4	Rajib Khadem	Assistant Engineer, Zone-4, DCC In Addition Assistant Engineer, Waste Management Division	Also working for Landfill Group (limited time for Collection and Transportation Group)
5	Md. Shafiullah Siddique Bhuyian	Assistant Engineer, Zone-1 Deputed to Zone-5	part time
6	Md. Mahaboob Alam	Assistant Manager, Saidabad Bus Terminal, In Addition Assistant Engineer, Waste Management Division	Also working for Landfill Group (limited time for Collection and Transportation Group)
7	Maksud Alam	Asst. Manager, Mohakhali Bus Terminal, Transport Department	part time
8	Md. Aminur Rahman Biswas	Conservancy Inspector, Zone-6	
9	Golam Marshed	Asst. Transport Supervisor, Transport Department	
10	Faruque Ahmed	Account Assistant, Transport Supervisor In charge, Transport Department	

Sl. No.	Name	Designation	Remarks
11	Mamun Uddin Ahmed	Asst. Transport Supervisor, Transport Department	part time
12	Siddiqur Rahman	Inspector, Mechanical Division-1, Engineering Dept.	
11	Habib Mohammed Al-Ahasan	Conservancy Inspector, Zone-4	
12	Dilbahar Ahmed	Research Officer, Urban Planning Department	
13	Kazi Hasiba Jahan	Geographer, Urban Planning Department, Engineering Department	
14	Ekramul Haque Khandker	Forman, Mech.-1, Engineering Department	
15	Md. Nuruzzaman	Forman, Mech.-2, Engineering Department	
16	Rakib Ahmed	Sub-Asst. Engineer (Mech. & Elect.), Store & Purchase Department	
Landfill Management Group			
1	Dr. Tariq Bin Yousuf	Executive Engineer, Engineering Division, Zone-5, Deputed to Project Director of Landfill Improvement Project, WMD	Group Leader, full time, working as Deputy Group Leader for Management and Coordination Group
2	Md. Mahaboob Alam	Assistant Manager, WMD	Deputy Group Leader (Operation), full time, Also working for Collection/Transport Group
3	A H M Abdulla Harun	Assistant Engineer, WMD	full time
4	Monoranjan Shala	Assistant Engineer, WMD	full time
5	Sanjib Ray	Truck Kully, Conservancy Department, Zone-4, DCC	Conservancy Inspector (In Charge)
6	Md. Sheik Farid	Guard (Ward), DCC	Acting Conservancy Inspector
7	Din Mohammad	Guard (Ward), DCC	Acting Conservancy Inspector
8	Sohel Rana	Guard (Ward), DCC	Landfill Instructor (Security Guard)
9	Dilkhosh Ahmed	Assistant Mechanic, Mech.Division, DCC	Landfill Instructor (Assis. Mechanical)
10	M. A. Shahed	Truck Kully, Conservancy Department, Zone-5, DCC	Landfill Instructor (Truck Kully)
11	Md. Abul Hossain	Truck Kully, Conservancy Department, Zone-5, DCC	Landfill Instructor (Truck Kully)
12	Gonesh Das	Truck Kully, Conservancy Department, Zone-5, DCC	Landfill Instructor (Truck Kully)
13	A.K.Chengish	Truck Kully, Conservancy Department, Zone-5, DCC	Landfill Instructor (Truck Kully)
14	Rajesh Chandra Das	Cleaner	Weigh Bridge Operator
15	Ranto Chandra Das	Cleaner	Weigh Bridge Operator
16	Probir Kumar Saha	Truck Kully, Conservancy Department, Zone-5, DCC	Weigh Bridge Operator
17	Md. Kaium Mondal	Truck Kully, Conservancy Department, Zone-5, DCC	Weigh Bridge Operator
18	Md. Mahmud Jahan Shaon	Cleaner	Weigh Bridge Operator
19	Shojib Kumar	Cleaner	Weigh Bridge Operator
20	Md. Julfiker Ali	Driver, Mech. Division-2, DCC	Tire Dozer Operator
21	Md. Rafiqul Islam	Heavy Equipment Operator, Mech. Division-2, DCC	Tire Dozer Operator
22	Abul Khayer	Machine Operator, Mech. Division-2 DCC	Tire Dozer Operator
23	Md. Alim	Assistant Machine Operator, Mech. Division-2, DCC	Tire Dozer Operator

Sl. No.	Name	Designation	Remarks
24	Kazi Jafar Ahmed	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
25	Sultan Ahmed	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
26	Kabir Ahmmed	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
27	Md. Babul	Assistant Machine Operator, Mech. Division-2, DCC	Buldozer Operator
28	Md. Selim	Heavy Equipment Operator, Mech. Division-2, DCC	Buldozer Operator
29	Julhas Uddin	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
30	Dewan Nazrul Islam	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
31	Jasim Uddin	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
32	Abdur Rashid	Dumper Driver, Mech. Division-2, DCC	Excavator Operator
33	Md. Delwar Hossain	Machine Operator, Mech. Division-2, DCC	Excavator Operator
34	Md. Zakir Hossain	Machine Operator, Mech. Division-2, DCC	Excavator Operator
35	Md. Shafi	Machine Operator, Mech. Division-2, DCC	Excavator Operator
36	Md. Rafique	Machine Operator, Mech. Division-2, DCC	Excavator Operator
37	Mongol Shikder	Skilled Cleaner	Electrical Works and Leachate Pond Operation
38	Md. Monir Hossain	Cleaner	Electrical Works and Leachate Pond Operation
39	Md. Atiqul Islam	Cleaner	Office & Environment Monitoring Helper
40	Gobindo Das	Cleaner	Cleaner (Control Building & Security Barrack)
41	Sudama Das	Cleaner	Car Wash Pool
42	Joton Das	Cleaner	Car Wash Pool
43	Bekey Das	Cleaner	Cleaner (Landfill Area)
44	Anando Das	Cleaner	Cleaner (Landfill Area)
45	Bijoy Das	Cleaner	Cleaner (Landfill Area)
46	Ratan Das	Cleaner	Cleaner (Landfill Area)
47	Biplob Das	Cleaner	Cleaner (Landfill Area)
48	Jewel Das	Cleaner	Cleaner (Landfill Area)
49	Gonga Raju	Cleaner	Cleaner (Landfill Area)
Financial Management Group			
1	Bellal Hossain Mia	Chief Accounts Officer, Accounts Department	Group Leader (part time)
2	Md. Mizanur Rahman	Internal Audit Department	Deputy Group Leader, almost full time

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Sl. No.	Name	Designation	Remarks
Management and Coordination Group			
1	Captain Bipon Kumar Saha	Chief Waste Management Officer (CWMO), WMD	Project Manager and Group Leader, (part time, in parallel with conservancy control, beautification program, etc.)
2	Dr. Tariq Bin Yousuf	Executive Engineer, Engineering Division, Zone-5, Deputed to Project Director of Landfill Improvement Project, WMD	Deputy Group Leader Also working as Group Leader of Landfill Management Group (full time)
3	Abul Hasnat Md. Ashraful Alam	Executive Engineer (Collection and Transport), WMD	Also working as Group Leader of Collection and Transportation Group (full time)
Community SWM Group			
1	Dewan Md. Shah Alam	Additional CWMO, WMD	Group Leader (part time, in parallel with conservancy control etc.) Retired on 11th January 2011
2	Md. Asaduzzman	Assistant CWMO (Planning), WMD	Deputy Group Leader Leader of sub-group (Public Awareness and Environmental Education) Officially assigned but do not work
3	Md. Shafiqul Islam	Waste Management Officer (Community), WMD	Leader of Sub-group (Primary Collection) (part time, in parallel with conservancy inspection)
4	Abdul Motaleb	Conservancy Inspector (Ward 36), Zone-4	Leader of Sub-group (Ward SWM) (part time, in parallel with conservancy inspection)
C/P working continuously			
5	Md. Mofizur Rahman Bhuyan	Conservancy Officer, Zone-7	part time, in parallel with conservancy inspection and supervising
6	Md. Asgar	Conservancy Officer, Zone-1	
7	Md. Mohashin	Conservancy Officer, Zone-5	
8	Md. Shahidul Islam	Conservancy Inspector (Ward 40), Zone-6	
9	Md. Benazir Ahmed	Conservancy Inspector (Ward 52), Zone-5	
10	Md. Abu Taher	Conservancy Inspector (Ward 76), Zone-1	
Newly added upon the request by the Group in March 2007 and continuously working			
11	Mamunur Rahman	Conservancy Inspector (Ward 15), Zone-8, Conservancy Dept., DCC	part time, in parallel with conservancy inspection
12	Rakib Hasan	Conservancy Inspector (Ward 39), Zone-6	
13	Md. Rabiuullah	Conservancy Inspector (Ward 19), Zone-9	part time, in parallel with conservancy inspection
14	Mohammad Farhad Hossain	Conservancy Inspector (Ward 17), Zone-9	
15	Md. Shah Kamal	Conservancy Inspector (Ward 63), Zone-3	
16	Md. Nazib Khan	Conservancy Inspector (Ward 58), Zone-3	
17	Md. Kamrul Hassan	Conservancy Inspector (Ward 77), Zone-2	
Newly appointed by CCO (19 persons)			
18	Md. Iqbal Karim	Conservancy OfficerOffier, Zone 6	part time, in parallel with conservancy supervising
19	Md. Monwer Hossain	Conservancy Officer, Zone 10	

Sl. No.	Name	Designation	Remarks
20	Shahab Uddin	Conservancy Officer, Zone 10	He is now working as an Officer of Special Duty (OSD)
21	Md. Wahiduzzaman Chowdhury	Conservancy Inspector, Zone 5	part time, in parallel with conservancy inspection
22	Radha Gobindo Biswas	Conservancy Inspector, Zone 7	Retired
23	Md. Abu Yunus	Conservancy Inspector, Zone 8	part time, in parallel with conservancy inspection
24	Bikash Chandro Das	Conservancy Inspector, Zone 1	
25	Md. Hanif Uddin	Conservancy Inspector, Zone 1	
26	Rashedur Rahman Rassel	Conservancy Inspector, Zone 5	
27	Md. Masum Hossain	Conservancy Inspector, Zone 8	
28	Md. Kamrul Hasan	Conservancy Inspector, Zone 2	
29	Mohammad Shahjahan	Conservancy Inspector. Ward 50, Zone 5 (letter 115/CD, dated 28th Feb., 2008)	
30	Md. Mofizur Rahman Patwary	Conservancy Inspector. Ward 75, Zone 1 (letter 36/CD, dated 7th July, 2008)	
31	M. A . Kuddus	Asst. CWMO, WMD (letter 125/CD, dated 17th July, 2008)	Retired
32	Abdul Hassan Chowdhury	Asst. CWMO, WMD (letter 125/CD, dated 17th July, 2008)	Retired
33	Md. Anisul Huq	Conservancy Officer (in charge), Zone 7 (letter 125/CD, dated 17th July, 2008)	part time, in parallel with conservancy inspection
34	Bashudeb Sarkar	Conservancy Officer, Zone 7 (letter 125/CD, dated 17th July, 2008)	part time, in parallel with conservancy inspection
CI newly transferred to WBA target ward (Replacement of previous CI) (1 person)			
35	Jahirul Islam	Conservancy Inspector , Zone 6	part time, in parallel with conservancy supervising
Collection and Transportation Group			
1	Abul Hasnat Md. Ashraful Alam	Executive Engineer , Waste Management Division	Group Leader (full time)
2	Md. Mahaboob Alam	Assistant Manager, WMD	Deputy Group Leader (full time)
3	Md. Ekramul Haque Khandker	Assistant Engineer (in charge) WMD	Full time
4	Md. Abu Musa	Sub Assistant Engineer/ Foremen, (Mechanical), WMD	
5	Md. Kabir Alam	Chief Mechanic (in charge)	Additional duty
6	Md. Aminul Islam	Assistant Store Keeper (in charge)	Additional duty
7	Nani Gopal Pal	Assistant Mechanic (in Charge)	
8	Golam Marshed	Asst. Transport Supervisor, Transport Department	
9	Faruque Ahmed	Account Assistant, Transport Supervisor In charge, Transport Department	
10	Mamun Uddin Ahmed	Asst. Transport Supervisor, Transport Department	
11	Aminur Rahman Biswas	Conservancy Inspector, Zone-6	part time
12	Habib Mohammed Al-Ahasan	Conservancy Inspector, Zone-4	
Landfill Management Group			
1	Dr. Tariq Bin Yousuf	Executive Engineer, Engineering Division, Zone-5, Deputed to Project Director of Landfill Improvement Project, WMD	Group Leader, full time, working as Deputy Group Leader for Management and Coordination Group
2	A H M Abdulla Harun	Assistant Manager, WMD	Deputy Group Leader (Operation), full time,
3	Monoranjan Shaha	Assistant Engineer, WMD	full time
4	Sanjib Ray	Truck Kully, Conservancy Department, Zone-4,	Conservancy Inspector

Sl. No.	Name	Designation	Remarks
		DCC	(In Charge)
5	Md. Sheik Farid	Guard (Ward), DCC	Acting Conservancy Inspector
6	Din Mohammad	Guard (Ward), DCC	Acting Conservancy Inspector
7	Sohel Rana	Guard (Ward), DCC	Landfill Instructor (Security Guard)
8	Dilkhosh Ahmed	Assistant Mechanic, Mech.Division, DCC	Landfill Instructor (Assis. Mechanical)
9	M. A. Shahed	Truck Kully, Conservancy Department, Zone-5, DCC	Landfill Instructor (Truck Kully)
10	Md. Abul Hossain	Truck Kully, Conservancy Department, Zone-5, DCC	Landfill Instructor (Truck Kully)
11	Gonesh Das	Truck Kully, Conservancy Department, Zone-5, DCC	Landfill Instructor (Truck Kully)
12	A.K.Chengish	Truck Kully, Conservancy Department, Zone-5, DCC	Landfill Instructor (Truck Kully)
13	Rajesh Chandra Das	Cleaner	Weigh Bridge Operator
14	Ranto Chandra Das	Cleaner	Weigh Bridge Operator
15	Probir Kumar Saha	Truck Kully, Conservancy Department, Zone-5, DCC	Weigh Bridge Operator
16	Md. Kaium Mondal	Truck Kully, Conservancy Department, Zone-5, DCC	Weigh Bridge Operator
17	Md. Mahmud Jahan Shaon	Cleaner	Weigh Bridge Operator
18	Shojib Kumar	Cleaner	Weigh Bridge Operator
19	Md. Julfiker Ali	Driver, Mech. Division-2, DCC	Tire Dozer Operator
20	Md. Rafiqul Islam	Heavy Equipment Operator, Mech. Division-2, DCC	Tire Dozer Operator
21	Abul Khayer	Machine Operator, Mech. Division-2 DCC	Tire Dozer Operator
22	Md. Alim	Assistant Machine Operator, Mech. Division-2, DCC	Tire Dozer Operator
23	Kazi Jafar Ahmed	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
24	Sultan Ahmed	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
25	Kabir Ahmmed	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
26	Md. Babul	Assistant Machine Operator, Mech. Division-2, DCC	Buldozer Operator
27	Md. Selim	Heavy Equipment Operator, Mech. Division-2, DCC	Buldozer Operator
28	Julhas Uddin	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
29	Dewan Nazrul Islam	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
30	Jasim Uddin	Machine Operator, Mech. Division-2, DCC	Buldozer Operator
31	Abdur Rashid	Dumper Driver, Mech. Division-2, DCC	Excavator Operator
32	Md. Delwar Hossain	Machine Operator, Mech. Division-2, DCC	Excavator Operator
33	Md. Zakir Hossain	Machine Operator, Mech. Division-2, DCC	Excavator Operator
34	Md. Shafi	Machine Operator, Mech. Division-2, DCC	Excavator Operator
35	Md. Rafique	Machine Operator, Mech. Division-2, DCC	Excavator Operator
36	Mongol Shikder	Skilled Cleaner	Electrical Works and Leachate Pond Operation
37	Md. Monir Hossain	Cleaner	Electrical Works and Leachate Pond Operation
38	Md. Atiqul Islam	Cleaner	Office & Environment Monitoring Helper
39	Gobindo Das	Cleaner	Cleaner (Control Building & Security

Sl. No.	Name	Designation	Remarks
			Barrack)
40	Sudama Das	Cleaner	Car Wash Pool
41	Joton Das	Cleaner	Car Wash Pool
42	Bekey Das	Cleaner	Cleaner (Landfill Area)
43	Anando Das	Cleaner	Cleaner (Landfill Area)
44	Bijoy Das	Cleaner	Cleaner (Landfill Area)
45	Ratan Das	Cleaner	Cleaner (Landfill Area)
46	Biplob Das	Cleaner	Cleaner (Landfill Area)
47	Jewel Das	Cleaner	Cleaner (Landfill Area)
48	Gonga Raju	Cleaner	Cleaner (Landfill Area)
49	20 security guards	Guard	
Financial Management Group			
1	Bellal Hossain Mia	Chief Accounts Officer, Accounts Department	Group Leader (part time)
2	Md. Mizanur Rahman	Internal Audit Department	Deputy Group Leader, almost full time

Over one hundred proper and deputed counterparts have been assigned every year with the fluctuation in number such as 95 in 2006, 112 in 2007, 117 in 2008 and 107 in 2009. See Annex 2-2 a) for the detail.

b. Operation Cost, and Facilities and Equipment List

1) Provision of land, building, and other necessary facilities

Bangladeshi side provided a sufficient office space for the Japanese expert team (JET).

2) Budget allocation

Table 1 Budget allocation for waste management of DCC from 2005-2009 (Taka)

	2005	2006	2007	2008	2009
Revenue		243,076,923	243,076,923	392,007,692	430,769,230
Expenditure		1,175,000,000	1,470,600,000	1,801,000,000	1,697,350,000

Table 2 Budget allocation for DCC from 2005-2009 (Taka)

	2005	2006	2007	2008	2009
Revenue		4,698,600,000	4,874,500,000	5,365,100,000	6,108,000,000
Expenditure		15,058,500,000	14,018,800,000	10,094,100,000	14,115,800,000

3) Allocation of operational costs for the project and the contract

DCC implement some activities, which are helpful to achieve the project outputs. Ward office, WBA, Pilot project, Community Waste Management. Staffing, Environment Education, School programs, Mobile school programs, Kick of meeting, Campaign, Leaflets, banner etc are implemented by their SWM budget. In 2009, DCC implement the projects, total actual cost are 11.73 lakh, in Ward 40 and 84. Besides, DCC made two contracts that mentioned Table 2.

Local operation expenses for utilities in the office such as electricity and telephone were born by the DCC.

Table 3 Costs of the project DCC implement, plan and actual

	2006	2007	2008	2009
Planned (Ward-40 & 84)				1,070,000
actual (Ward-40 & 84)				1,173,000

Table 4 Contracts done by DCC

Title of the contract	Contractor	Planned budget (tk)	Actual contract amount (tk)	Contract method	Date of contract	Amount by year (tk)
Construction of Road Plant form & final soil cover	M/S Abul & Brothers	170.31	14,980,000	OTM	11/11/08	14,700,000
Old work for the construction of road, platform & soil cover	M/S Abul & Brothers	33.24	3,319,000	OTM	02/04/09	3,300,000

Appendix 4 Records of Meetings

4-1) Memos of Steering Committee

1) First Steering Committee Meeting

First Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Discussion on the project for Strengthening of Solid Waste Management in Dhaka City
Date and Time	May 03, 2007 15.30-17.00
Venue	Room # 212, DCC
Attendant	1. Mr. Saifuddin Ahmed, Chief Executive Officer, DCC 2. Ms. Nasrin Akhter Chowdhury, Deputy Secretary, Economic Relation Division (ERD) 3. Md. Golam Mostofa,Secretary, DCC 4. Md. Mehedi Ali Khan, Chief Engineer, DCC 5. Col(Dr) Md. Azizul Hoque, Chief Health Officer, DCC 6. Commander M. R. Chowdhury, Chief Conservancy Officer, DCC 7. Md. Nurun Nabi, Chief Accounts Officer, DCC 8. Mohammad Hossain, Chief Store and Purchase Officer, DCC 9. Dr. Engr. Tariq Bin Yousuf, Project Director, Landfill Improvement Project, DCC 10. Nobuko Kayashima, Resident Representative, JICA Bangladesh Office 11. Akiko Bushimata, Deputy Resident Representative, JICA Bangladesh Office 12. Mr. Naoki Hara, Chief Advisor, JICA Expert Team 13. Mr. Mahmoud Riad , Team Member, JICA Expert Team 14. Noboru Osakabe, Team Member, JICA Expert Team 15. Junko Okamoto, Team Member, JICA Expert Team 16. Hiroshi Abe, Team Member, JICA Expert Team
Agenda	1. Explanation of Executive Summary of IC/R by Chief Advisor, JICA Expert Team 2. Discussion on IC/T by Attendants 3. Selection of Project Logo 4. Others
Material	1. Material Used in the Meeting - Power Point Slides 2. Proposed printed logo – Attached

Discussions and Decisions:

After introduction of the participants, with the permission from Mr. Saifuddin Ahmed, CEO, Dr. Tariq Bin Yousuf, PD started the meeting stating that main objective of the meeting is to define the TOR of the Steering Committee and also to discuss about the next strategy of the Project. He requested Mr. Hara, Chief Advisor to explain the executive summary of the Inception Report through presentation.

(1) Explanation of Executive Summary of IC/R by Chief Advisor, JICA Expert Team:

1. Background of the Project:

Mr. Hara explained that the project for Strengthening of Solid Waste Management in Dhaka city is a follow up project of the Development Study carried out by JICA Study Team during November 2003 – March 2006 to formulate the Clean Dhaka Master Plan and preparation for implementation of 4 priority programs. He informed that the project is a Technical Cooperation Project which he proposed to name as Clean Dhaka Project.

Organization for Project Implementation: Mr. Hara explained the proposed organization for the Project Implementation, comprises of Steering Committee, Project Team and the Counterpart Team, interrelated to each other. He stated that the Steering Committee, headed by the Chief Executive Officer is formed by members from the concerned ministry, Concerned Departmental Heads of DCC, Project Manager (Head of WMD), Embassy of Japan, JICA Bangladesh and JICA Expert Team.

2. Project Framework:

To describe the project framework Mr. Hara explained about the out puts, project purpose and overall goal of the project. He mentioned five (5) specific out puts of the project.

3. Technical Policy:

Mr. Hara explained the Technical Policy of the project through specific discussion on the following issues:

1) **Capacity Development:** Three levels of Capacity Development are explained mentioning the target groups and the methods to be followed for the development.
2) **Intensive Resource Input to Focal Areas:** Mr. Hara explained the importance of the synergism through synchronized improvements and activities in the focal areas.

3) **Manifold and Multi-dimension Public Relation and Advocacy:** Mr. Hara explained that Manifold and Multi-dimension Public Relation and Advocacy are important to ensure appropriate Solid Waste Management, for which a number of activities and measures will be conducted among the stakeholders.
4) **Authorisation for the Project Implementation:** Mr. Hara stated that according to the recommendations of the Master Plan, projects/programs/activities will be approved and if necessary, be supported with new by-laws and/or regulations for implementation of the project.
5) **Project Activities agreed in PDM workshop and Group Meetings:** Mr. Hara informed that Project Design Matrix (PDM) workshop participated by the members of different groups of the DCC counterpart and JICA Expert Team Members, has been conducted on 18th, 19th and 22nd of April, 2007 to determine the activities to attain five (5) outputs of the project. Mr. Hara described the activities for each output that is finalized through the PDM workshop.

2) Discussion on IC/T by Attendants:

With the above point Mr. Hara ended his presentation. Mr. Saifuddin, CEO thanked Mr. Hara or explaining the purpose, outputs and Terms of Reference of the Steering Committee. Then pen discussions were carried out as follows:

Dr. Tariq, PD informed that counterpart personnel were actively and directly involved in reviewing the activities for each output during the PDM workshop. He also mentioned that C/P personnel were very active to formulate a practical list of activities with their previous experiences from the Clean Dhaka Master Plan.

Dr. Tariq also emphasized the importance of the following:

- Establishment of Waste Management Department (WMD)
- Coordination among the different involved departments
- Fulltime manpower deployment
- Continued activities for different groups
- Proper operation and maintenance of the landfill activities. In this regard he also mentioned that construction works of the landfill site is yet to be completed and for the operation & maintenance of the landfill site it will require 3.60 crore Taka in addition to the previous year budget.
- Complete setup of Landfill Management Unit with full time staffs and coordination
- Good accounting system with up-to-date software to get a better forecasting during budget formulation.

- Dr. Tariq proposed to include Chief Revenue Officer and General Manager of Transport Department in the Steering Committee. With the members consent, Mr. Saifuddin assured their inclusion in the Committee.

- To reply a query from Mr. Saifuddin, Project Chief, CEO, DCC, Dr. Tariq informed that 3.60 crore Taka budget will be required from the July, 2007 for operation and maintenance works of the landfill site.

- Ms. Nobuko Kayashima, Resident Representative, JICA Bangladesh Office informed that JICA is satisfied that DCC has been working very hard in last 2/3 months. She explained three (3) point from the JICA side:
    - JICA understands that formulation of new Department is at implementation stage and they hope to see the establishment of the Department within an earliest possible period as this is seriously needed to start the work and make the project successful. She informed that JICA is ready to cooperate if necessary, to pursue the central government to expedite the establishment process.
    - Second point Ms. Kayashima mentioned is the Counterpart Assignment. She emphasized that without sufficient number of capable staff assignment of DCC Counterpart personnel and WMD.
    - Third point she mentioned was the budget allocation for not only the landfill improvement but also for the solid waste management. She also mentioned that they are ready to cooperate to work together.

- Mr Saifuddin, informed that DCC is not creating, rather they are re-constituting the existing department (Conservancy and Waste Management Division). Mr. Saifuddin welcomes JICA to work together with DCC to negotiate with Government in this regard. He mentioned that this morning (03.05.2007) they have deployed some new manpower to the Department. . He informed that recruitment of new staffs will be done after getting approval from the Central Government otherwise staffs from the other department will be deployed to run the department. He also informed that many staffs do not have much work to do due to privatization of ward solid waste management and they may be available to work fully for the department.

- Mr. Saifuddin also informed that in the last year budget there were about 50 Lac Taka allocated for the Community Solid Waste Management. Depending on the revenue generation budget will be allocated. He emphasized that DCC may need support from JICA for Capital Budget and DCC can manage operational budget. He assured that in the next year DCC budget, the required landfill budget will be kept.

- In reply Ms. Kayashima emphasized the issue of the establishment of the WMD. She said that they understand the need for capital budget but unless establishment process of the WMD is completed, JICA Bangladesh Office cannot pursue Tokyo Headquarter for support. As this is the most important fact for getting further support from the H.Q., she inquired about the approximate timing for the establishment.

- Mr. Saifuddin mentioned that if strongly pursued, it may take two (2) months otherwise 2/3 years to establish the Department. He also informed that DCC has already incorporated all queries of the Ministry of Establishment in the file; hence it will take lesser time after submission. He hopes to send the complete file to the LGRD by next week and within 15 days to the Ministry of Establishment. Then pursuing will be required to expedite the process and exact timing can be assured. Also he will personally approach the Secretaries in this regard.

- Ms. Kayashima said that earliest establishment is highly expected. In the meantime she emphasized to continue the activities of the project and hence requested for required amount of staffs and coordination between departments to continue until new Department is established.

- Mr. Hara, inquired about the time requirement at the Ministry of Finance as the file will proceed to that ministry after getting approval from the Ministry of Establishment. Mr. Saifuddin informed that it will not take much time as they are not going to pay the salary for the new staffs to be recruited. Their responsibility is mainly to check the salary scale of staffs of the Department. He also mentioned that Advisor of Local Government will finally sign the file.

- As JICA Expert Team will be leaving for a while, Ms. Kayashima requested the DCC authority to provide/ exchange information with the JICA Expert Team Members and JICA Staff. With the concern of related personnel, Mr. Saifuddin assured to conduct in this regard.

- Ms. Bushimata said that in last 2/3 weeks counterpart personnel have been participating in a series of workshops to formulate the PDM. This time she is very surprised to see that so many new ideas from the DCC counterpart personnel, which are reflected through the activities for each output. She expressed her satisfaction over the performance of the C/Ps for formulating the activities with high motivation.

(3) Selection of new Logo:

- Mr. Hara explained that as the previous logo, designed during the Master Plan formulation is made of crayon, it is difficult to print. Hence he proposed for selecting a new Logo for the project. Mr. Saifuddin did not welcome the idea to change the logo of the project rather he preferred to use the previous logo. It was agreed to do some designing work on the previous logo to sharpen the image to make easily printable.

(4) Others:

- The Mr. Hara requested to hold another Steering Committee Meeting possibly in the last week of May, 2007 to approve the Inception Report. With the concern of present members, Mr. Saifuddin fixed the Second Steering Committee Meeting to be held on May 31, 2007.

- Mr. Riad, Deputy Chief Advisor, JICA Expert Team emphasized that the Inception Report will be finalized by the DCC counterpart and JICA Expert Team together. Then he informed that two of the JICA Experts, Mr. Abe and Ms. Okamoto will be leaving following week.

- Mr. Abe expressed his satisfaction about the progress of the Landfill Activity and also he mentioned that Dr. Tariq as well as DCC counterpart has been working very hard.

- Ms. Okamoto informed that there have been meetings every week of her group to expedite the community works. She also said that this time she enjoyed a very strong support from the DCC counterpart, which is very encouraging. She wished to incorporate the ideas from the CCO, CEO and other C/Ps for development and continuation project work.

Then thanking all the members present, Mr. Saifuddin declared the end of the Meeting.

(Mr. Saifuddin Ahmed)
Chief Executive Officer
Dhaka City Corporation

(Mr. Naoki Hara)
Chief Advisor
JICA Expert Team

2) Second Steering Committee Meeting

Second Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Discussion on inception report and annual plan of activities for the next financial years of the project for Strengthening of Solid Waste Management in Dhaka city.
Date and Time	May 30, 2007 15.10-16.30
Venue	Room # 212, DCC
Attendant	1. Mr. Saifuddin Ahmed, Chief Executive Officer, DCC 2. Dr. M. Jahirul Islam, Deputy Chief, Ministry of LGRD & C Bangladesh Secretariat, Dhaka 3. Dr. Ashraf Ali, Associate Professor, BUET 4. Col(Dr) Md. Azizul Hoque, Chief Health Officer, DCC 5. Commander M. R. Chowdhury, Chief Conservancy Officer, DCC 6. Md. Sharfuddin Khan Jilani, Chief Revenue Officer, DCC 7. B. M. Enamul Hoque, General Manager (Transport), DCC 8. Dr. Engr. Tariq Bin Yousuf, Project Director, Landfill Improvement Project, DCC 9. Ms. Akiko Bushimata; Deputy Resident Representative, JICA Bangladesh Office 10. Mr. Naoki Hara, Chief Advisor, JICA Expert Team 11. Ms. Tamachi Yamouchi , Team Member, JICA Expert Team 12. Ms. Airi Toguchi, JOCV 13. Mr. Ryasuke Hayashi, JOCV
Agenda	1. Opening by CEO, DCC 2. Confirmation of Minutes of the First Steering Committee Meeting 3. Discussions about- 1) Explanation of Policies for Project Implementation by Chief Conservancy Officer, DCC 2) Explanation of PDM, PO and Annual Plans of Activities by Chief Advisor of JICA Expert Team 3) Discussion on the Inception Report and Annual Plans of Activities by Participants
Material	1. Agenda of the Meeting 2. Executive Summary of the Inception Report 3. Annual Action Plan of different groups.

Discussions and Decisions:

At the beginning of the Meeting, Minutes of the First Steering Committee Meeting held on May 03, 2007 was confirmed. Then with the permission from Mr. Saifuddin Ahmed, CEO, Mr. Commander M. R. Chowdhury, Project Manager (Chief Conservancy Officer), made a presentation on policies for Project implementation. After CCO's presentation Mr. Naoki Hara, Chief Advisor, JICA Expert Team explained outlines on the activities to be implemented in the Project as well as Project Design Matrix (PDM), Plan of Operation and Annual Plans of Activities.

During the Second Steering Committee meeting following issues have been confirmed and/or agreed:

1. Approval of IC/R and Annual Activity Plan for the Next Financial Year

It was approved that Project Team can start activities as described in IC/R and Annual Plans of Activities after confirmation by DCC Counterpart of their participation and commitment for preparation of IC/R.

2. DCC's Initiative for Implementation of Additional Activities

Ms. Akiko Bushimata, Deputy Resident Representative, JICA Bangladesh Office appreciated high motivation of DCC Counterpart for adding of the activities in the Project Design Matrix (PDM) of version 1. However, since inputs from Japanese Side, such as assignment of the JICA Experts and budget allocation for the Project implementation, were decided upon the agreement Project Framework described in the R/D, it is expected that for the additional activities should be implemented with the strong initiative of DCC, including budget and human resource allocation. Both Japanese and Bangladeshi Sides agreed upon on this point.

3. Establishment of the Waste Management Department

Mr. Saifuddin, CEO and DCC Counterpart expressed the intention to make utmost continuous effort in order to get early approval of the central government on the establishment of the Waste Management Department.

4. Resource Recovery Activities

Dr. Ashraf Ali, Associate Professor, BUET made comments on resource recovery related activities. Mr. Hara, Chief Advisor, JICA Expert Team explained that these activities in the IC/R are planned as those to be implemented by DCC and activities resource recovery are

generally those of the private sector. Mr. Hara also stated that the Project Team encourages resource recovery from waste in principle.

5. Coordination in Project Implementation

Dr. M. Jahirul Islam, Deputy Chief, Local Government Division (LGRD) commented on necessity for coordination on vehicle procurement in different project/proposal submitted to the Government of Bangladesh (GOB). Ms. Bushimata also commented on importance of coordination. Mr. Saifuddin, CEO answered that those proposals do not have any contradiction as pass through the approval of the Waste Management Committee.

6. Status of the Technical Project Proposal

Ms. Bushimata inquired about the current status of Technical Project Proforma/Proposal (TPP). DCC Counterpart responded that DCC will soon submit the TPP to LGRD.

5. Modification of PDM

Mr. Saifuddin, CEO asked possibility of modification of PDM. Mr. Hara and Ms. Bushimata replied that it may be modified when necessary. Both Sides confirmed that activities in the PDM can be modified, while outputs will have to be fixed.

8. Sustainability of the Project Activities

Md. Sharfuddin Khan Jilani, Chief Revenue Officer, DCC, mentioned about sustainability of Project activities.

Then thanking all the members present, Mr. Saifuddin declared the end of the Meeting.

(Mr. Saifuddin Ahmed)
Chief Executive Officer
Dhaka City Corporation

(Mr. Naoki Hara)
Chief Advisor
JICA Expert Team

3) Third Steering Committee Meeting

Third Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Submission of Progress Report 1 (PRGR (1)) of the project for Strengthening of Solid Waste Management in Dhaka city.
Date and Time	October 24th, 2007 15:00 – 16:40
Venue	Room # 212, DCC
Attendant	1. Mr. Md. Golam Mostafa, CEO-in-charge, DCC 2. Dr. Md. Jahirul Islam, LGRD, Bangladesh Secretariat, Dhaka 3. Col. Md. Ashfakul Islam, Chief Engineer, DCC 4. Commander M. R. Chowdhury, Chief Conservancy Officer, DCC and Project Manager 5. Mr. Md. Mashiur Rahman, Chief Store & Purchase Officer, DCC 6. Mr. Md. Sharfuddin Khan Jilani, Chief Revenue Officer, DCC 7. Mr. B. M. Enamul Hoque, General Manager (Transport), DCC 8. Dr. Engr. Tariq Bin Yousuf, Group Leader for Landfill Management Group, Project Director, Landfill Improvement Project, DCC 9. Mr. Abul Hasnat Md. Ashraful Alam, Assistant Engineer, Group Leader for Collection and Transport Group, Mechanical 1 Department, Engineering Division 10. Mr. Md. Shah Alam, DCCO, DCC, Group Leader for Community Management Group 11. Mr. Anwar Hossain Patwary, Manager Transport, DCC 12. Ms. Nobuko Suzuki Kayashima, Resident Representative, JICA Bangladesh Office 13. Mr. Eiichiro Cho, Additional Resident Representative, JICA 14. Mr. Zaki Md. Ziaul Islam, Program Officer, JICA 15. Mr. Mahmoud Riad, Deputy Chief Advisor, JICA Expert Team 16. Ms. Junko Okamoto, Team Member, JICA Expert Team
Agenda	1. Opening by CEO-in-charge, DCC 2. Presentation of Progress Report 1 by Project Team 3. Discussions on Progress and Challenges 4. Closing by CEO-in-charge, DCC
Material	1. Agenda of the Meeting 2. Progress Report (1) Draft 3. Presentation Slides

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Discussions and Decisions:

At the beginning of the Meeting, Mr. Md. Golam Mostafa, DCC CEO in-charge welcomed the participants to the 3rd Steering Committee Meeting. Then with the permission from Mr. Golam Mostafa, CEO in-charge, Commander M. R. Chowdhury, Project Manager (Chief Conservancy Officer), requested Mr. Mahmoud Riad, Deputy Chief Advisor, JICA Expert Team to make a brief presentation on the progress of the Project as outlined in the Progress Report 1. Mr. Riad together with the Project Team members Dr. Tariq Bin Yousuf, Landfill Management Group Leader, Mr. Abul Hasnat Md. Ashraful Alam, Collection and Transportation Group Leader and Mr. Md. Shah Alam, Community Management Group Leader made the presentation and discussed the report contents.

During the Third Steering Committee meeting the following issues have been confirmed and/ or agreed upon:

1. Progress of the Project

The Project commenced in February 2007 and this is the first report submitted outlining the Project Progress; Progress Report 1.

By each Project output the progress and the delays were reported as follows:

(1) Output 1 – Project Management and Coordination are in place

- Developing PDM and PO
- Facilitating the overall activities of the four groups of the Project
- PR activities involving setting up of web page, publication of newsletters, implementing sticker campaign and development of promotional materials
- Participation in meetings of the other Groups and monitoring their progress
- Participation in events of the other Groups such as workshops for cleaners and drivers, PRA training for Group 2 C/P personnel, and discussion of the Financial Management Group
- Public Awareness survey in wards 36 and 76 to develop the baseline data, focusing on level of satisfactory with DCC's SWM services
- Preparation of this Progress Report 1

Delays encountered by this Group may be summarized as follows:

- The Waste Management Department has yet to be established
- The kick-off workshop has been postponed from August to January of next year
- The program for training in third country has been postponed from October to January of next year

(2) Output 2 – Participatory SWM is promoted

- Development and dissemination of the Ward SWM Guidelines
- Commencement of ward SWM in ward 36 with the community meetings to set-up the Community Unit Working Groups there
- Successful completion of PRA training
- PR activities such as leaflet and stickers production and distribution
- Launching of environmental education programs consisting of model school program and

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mobile school program

The Community SWM Group needs to make more efforts to overcome the following delays:

- Complete and finalize the draft Ward SWM Guidelines
- Speed up the process for setting-up CUWG and WSWMC in wards 36 and 76
- Continue discussions within DCC on extent of application of Ward SWM Guidelines to the Primary Service Collection Providers

(3) Output 3 – Capacity for solid waste collection and transport is improved

- Preparing the draft paper on collection and transportation improvement
- Holding four (4) workshops for inspectors, cleaners, drivers and mechanics
- Updating data base on existing trucks and containers including preliminary analysis on number of trips of trucks to Matuail LF and identification of issues, and preliminary analysis of ward-wise capacity distribution of trucks
- Updating and detail analysis on work flow of collection vehicle repair and identification of causes of long elapsed time of repair works
- Planning a pilot project to study introduction of a new collection system based on improvement of the waste discharge system and primary collection system
- Study visit to Chittagong City Corporation to discuss and observe their collection system based on the compactors
- Attending training for GIS arranged by JICA Bangladesh

The delay in connecting the weighbridge at Matuail LF to the electricity power resulted in delays in three main activities of the CTG. These are:

- Matuail LF weighbridge data analysis
- Identification of inefficient collection and transport routes
- Optimization and re-organization of the inefficient routes

(4) Output 4 – Final disposal sites are operated and managed appropriately

- Inauguration of Matuail Sanitary LF
- Efforts to develop the Landfill Management Unit with competent staffing for improved operation of the landfill
- Preparation of Environmental Management Plan
- Preparation of landfill operation manual
- Securing of operation and maintenance budget
- Holding workshop for heavy equipment operators at Matuail LF
- Holding coordination meeting of related departments for the smooth operation of Matuail LF

The delays encountered by the Landfill Management Group, may be summarized as follows:

- While the Landfill Management Unit has not yet been fully activated, DCC has taken

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preliminary steps during the last 2 days to assign 15 number staff to the LMU, effective immediately.

- Both Matuail existing landfill improvement and expansion construction works faced some delays due to prolonged rainy season and some payment delays, but work is progressing and expected to be completed by November.
- Administrative and function control of staff is delayed.

(5) Output 5 – Accounting system necessary for SWM is improved

- Collection and input of SWM financial data from the zones and related departments
- Data analysis and obtaining preliminary results on SWM cost analysis by sector
- Estimate of total SWM cost in FT 2006/'07 to be 80 crore Taka (800 million TK). This amount was spent by the related departments as follows; Conservancy 55%, Transport 31%, Mechanical-1 8%, and Mechanical-2 6%.
- By SWM activity the cost may be broken down into 49% for road cleaning, 2% for drain cleansing, 43% collection and transport and 6% for disposal.

3. Establishment of the Waste Management Department

The Project Team explained that with the inauguration of Matuail Landfill and the lack of progress on improvement of secondary collection and transport the Project will increase its attention towards operational aspects of SWM.

The present situation of scattered responsibilities of the various activities related to SWM makes it very difficult to improve the operation. The Project Team once more reaffirmed the importance of establishing the Waste Management Department (WMD) not only for the Project but more important for the overall SWM system in DCC.

Unfortunately to date the Waste Management Department has not yet been established.

In reply to a query by the Ms. Kayashima, Resident Representative, JICA Bangladesh, DCC said that they could not offer any estimation as to the date when WMD may be established. DCC reiterated that they are doing their utmost efforts to submit the necessary application and monitor it. They further explained that they would request the Ministry of Establishment to separate the establishment of WMD from the requests for other institutional changes submitted for DCC overall in the application, and consider first the WMD in order to avoid delay.

The Resident Representative reminded the meeting participants that the establishment of the WMD had been a pre-condition for the Project and all had understood the urgency for the WMD even before the Project commenced. Without the WMD, the Resident Representative emphasized that it would be difficult to continue with the Project and that the Project may be suspended.

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Ms. Kayashima explained that JICA is providing technical support while establishment of WMD is an internal administrative procedure and hence JICA cannot be involved in this process. However the Resident Representative offered to support the efforts of DCC to explain the urgent need for the WMD to other related government agencies in order to facilitate the WMD establishment.

The Resident Representative stated that JICA Headquarters would dispatch an Evaluation Mission to Dhaka for this Project in mid-February, 2008 and that by that time DCC is strongly requested to show significant progress for the establishment of the WMD.

DCC promised to continue to pursue this matter within the related governmental agencies and provide a reply to JICA Bangladesh as soon as possible as to the estimated date of establishment and any obstacles that may be standing in the way of the establishment.

4. Effectiveness of the Internal Arrangement

In the absence of the WMD, the Project has been running based on an "internal arrangement" by which DCC would provide to the Project full-time and part-time counterparts who are expected to join the WMD once it is established.

The Japanese side explained that the internal arrangement was not working so well. For the Community Management Group (Output 2) and Collection and Transport Group (Output 3) it was necessary to provide 2-3 full-time counterparts for each respectively. For Landfill Management Group, once the Landfill Management Group has been activated then the required counterparts would become available.

The Bangladesh side agreed to seriously look into this matter and provide the required full-time counterparts.

5. DCC Budgeting for Project Activities

In the 1st Steering Committee meeting (3rd May, 2007) DCC had informed that a budget of Tk. 50 laks had been allocated for the activities of community SWM. Based on that very welcome news the Project Team had prepared the cost sharing between the Japanese side and DCC for a number of activities.

However in spite of the budget availability, DCC has been facing difficulties to meet its financial obligations and consequently some events have been subjected to unnecessary delays.

DCC has promised to solve this internal problem as soon as possible in order not to incur delays.

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6. Necessity to Improve Maintenance and Repair Workshop

The Project Team explained that some progress was being made by Mechanical 1 Department to improve procedural matters at the workshop for obtaining spare parts. This has had a marked effect on decreasing repair time.

The Project Team confirmed that they will make further efforts to develop the improvement plan for the workshop and they requested stronger cooperation from the Mechanical 1 Department to identify the problems and develop the solutions.

7. Finalization of the Progress Report 1

The JICA Expert Team submitted 20 copies of the Draft Progress Report 1. The Bangladesh side will compile any comments that they may on the contents of the report and submit to the JICA Expert Team by November 1st, 2007. Based on these comments the JICA Expert Team will finalize the Progress Report 1 and submit 50 copies to DCC by mid-November 2007.

Then thanking all the members present, Mr. Golam Mostafa, CEO (in charge) declared the end of the Meeting.

28.10.2007.

Mr. Md. Golam Mostafa
CEO (in charge)
Secretary
Dhaka City Corporation

28th Oct., 2007

Mr. Mahmoud Riad
Deputy Chief Advisor
JICA Expert Team

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4) Fourth Steering Committee Meeting

Fourth Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Fourth Steering Committee Meeting on Project Logo Selection and other matters
Date and Time	January 21st, 2008 15:30 – 16:15
Venue	Room # 212, DCC
Attendant	1. Md. Alauddin, Chief Executive Offecer 2. Md. Golam Mostofa, Secretary, DCC 3. Col.(Dr.) Md. Showkat Ali, Chief Health Officer, DCC 4. Col. Md. Ashfakul Islam, Chief Engineer, DCC 5. Md. Sharfuddin Khan Jilani, Chief Revenue Officer, DCC 6. Ms. Nasreen Akter Chowdhury, Deputy Secretary, ERD 7. Mr. B. M. Enamul Hoque, General Manager (Transport), DCC 8. Md. Nurun Nabi, Chief Accounts Offecer, DCC 9. Mr. Abul Hasnat Md. Ashraful Alam, Assistant Engineer, DCC 10. Md. Mahbubul Alam, Assistant Engineer, DCC 11. Ms. Akiko Bushimata, Deputy Resident Representative, JICA Bangladesh office 12. Mr. Zaki Md. Ziaul Islam, Program Officer, JICA Bangladesh Office 13. Mr. Mahmoud Riad, Deputy Chief Advisor, DCC 14. Mr. Masaharu Takasugi, JICA Expert Team
Agenda	1. Finalization of project logo 2. Opinion on eco-bag 3. Co-ordination of Project activities
Material	1. Agenda of the Meeting 2. Picture of the logos 3. Eco bag

Discussions and Decisions:

At the beginning of the Meeting, Mr. Mohammad Alauddin, CEO, DCC welcomed the participants to the 4th Steering Committee Meeting. Then with the permission of the chair, Mr. Mahmoud Riad, Deputy Chief Advisor, JICA Expert Team made a presentation. During the Fourth Steering Committee meeting the following issues were confirmed and/ or agreed upon:

1. Finalization of project logo

Mentioning about the logo used during the Master Plan formulation, Mr. Riad explained that both DCC and the Japanese side had previously agreed to retain that logo and at the same time make a new logo as the "Project for Strengthening of Solid Waste Management in Dhaka City" is a new project, even though it is a continuation of previous master plan study. Therefore there will be two logos. Hence emphasizing the selection of a second logo, Mr. Riad informed that four candidate logos have been short listed from a total of forty candidate logos submitted by the contestants of the logo contest announced by JICA Expert Team during September, 2007. The members of the meeting voted orally to select the 1st and 2nd prize of the contest and finalized the logo for the Project for Strengthening of Solid Waste Management in Dhaka City" as shown below.

Logo for the project for strengthening of solid waste management in Dhaka city	
CLEAN DHAKA GREEN DHAKA	Clean Green Dhaka
1st prize winner	2nd prize winner

2. Opinion on eco-bag

All the members present were supplied with the sample of eco-bag prepared and distributed by JICA Expert Team during June, 2007, for their kind comments for future development. To answer a query from Mr. Alauddin, Mr. Riad explained that the main purposes of eco-bag is to replace the conventional polyethene bag used by the households for daily shopping, which will be re-usable and environment friendly. Then Mr. Alauddin requested all the members to give their kind comments on eco-bag that will be collected later.

3. Co-ordination of project/activities

Mr. Riad briefly described the remaining major activities of the project during this 3rd FY of the Project:

- India Tour: The Study tour team consisting of 8 DCC staffs, 2 JICA Experts and 1 JOCV

has already left for India on 20th January, 2008 and the team will come back on 25th January, 2008. They will visit the cities of Hyderabad, Pune and Kolkata, meet with the SWM city officials there and visit SWM facilities.

- Pilot Project 1 – Safety Gear: This project consists of three specific activities; Provision of safety gears of waste workers, Safety and Sanitation Committee, Revision and introducing "Workers Manual". Project locations are wards 36 and 76 and Matuail landfill site and will be completed by the middle of March, 2008.
- Pilot Project 2 – Strengthen Ward SWM: This project includes renovation of ward 36 office and strengthening of ward office activities. Main objective is to set-up a functional ward solid waste management office at ward 36. Renovated ward SWM office at 36 will be inaugurated during first week of February, 2008.
- Pilot project 3 – New Collection System: This project includes scheduled station collection and harmonizing primary and secondary collection in two areas of ward 76. This one month project will be implemented during February, 2008.
- Clean Dhaka Ward Contest: Through this contest one conservancy inspector and one cleaner will be selected from amongst the 90 wards of Dhaka city, and shall be awarded for their outstanding contribution to solid waste management in Dhaka city through their services.
- 2nd Bangladesh SWM Conference: JICA has already allocated budget for a one day conference in this FY and hence Mr. Riad requested to proceed with the plan to organize a conference on 11th February, 2008, where the technocrats involved in SWM operations from the six (6) city corporations shall be invited. At this point emphasizing the time limitation, Mr. Alauddin proposed to speed up the preparation process, as well as to invite the members of the Steering Committee and the media to publicize the event.
- Visit of JICA Advisory Committee: JICA Advisory committee consisting of two members and one staff from JICA Head Office will be staying at Dhaka for two weeks from 11th February, 2008. During their stay they will asses the project activities progress and the status of the WMD establishment. Emphasizing the importance of their visit Mr. Riad requested the outmost efforts of DCC to show substantial progress regarding the formation of WMD.
- Project Progress Workshop: As one year has already finished, hence instead of the originally planned kick off workshop, there will be a project progress workshop on 2nd March, 2008 to be participated by DCC C/Ps, DCC officials; representatives from other donor agencies, CBOs, NGOs etc.
- Progress Report 2: Progress Report 2 shall be submitted to DCC at the beginning of March and it is requested to convene the Steering Committee on 6th March, 2008 to present the report contents by the Project team. Mr. Alauddin agreed to convene the fifth steering committee meeting at the stated date.
- Billboard: Five billboards have already been constructed at five different important locations in Dhaka city to make the citizens aware of the project as well as the importance of solid waste management.

Upon completion of the presentation the following issues were discussed:

- To answer a query from Col. Md. Ashfaqul Islam, Chief Engineer, DCC and Ms. Nasreen Akhter Chowdhury, Deputy Secretary, ERD Mr. Riad informed that Pilot Project 3 shall cover the Koratitola area of ward 76, where 500 households shall be supplied with small plastic bins and paper bags for 30 days to bring their waste at fixed time directly to designated stations along the route of the collection truck. Mr. Riad also informed that the community people of that area are very much positive to cooperate in the project activities. He also mentioned that success of the pilot project will facilitate DCC future plans to introduce compactor trucks for waste collection.
- Thanking and appreciating the efforts and hard works of DCC officials for the establishment of WMD, Ms. Akiko Bushimata, Deputy Resident Representative, JICA Bangladesh office inquired about the present status of formation of WMD. In reply Mr. Alauddin informed that revised proposal of the organogram of DCC including WMD will be submitted on 22nd, January 2008 to the LGRD. Mr. Alauddin also mentioned about the positive attitude of the ministry officials in recent meetings regarding formation of WMD and he also requested Ms. Nasreen to cooperate and support in this regard.
- Then mentioning about landfill site visit after coming back from Japan, Mr. Alauddin said that his expectations did not match with the status of landfill site; hence he requested for experts support to continue landfill operation smoothly and complete the project within the stipulated time and thus to make the project a success. Mr. Riad mentioned that he had visited the landfill 3 times since his return to Dhaka and was satisfied that the operation was continuously improving and that DCC was making efforts to solve the problems.
- Finally Mr. Riad requested support from the DCC officials especially from Mr. B M Enamul Hoque, GM (Transport), DCC for his kind support for successful operation of the project as transport department support is vital for the rationalization of collection and transport and strengthening of solid waste management.

Then thanking all the members present, Mr. Alauddin, CEO, DCC declared the end of the Meeting.

Md Alauddin
Chief Executive Officer
Dhaka City Corporation

for Mr. Mahmoud Riad
Deputy Chief Advisor
JICA Expert Team

5) Fifth Steering Committee Meeting

Fifth Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Fifth Steering Committee Meeting
Date and Time	March 9th, 2008 10:30 – 11:45
Venue	Room # 212, DCC
Attendant	1. Md. Alauddin, Chief Executive Offecer 2. Md. Golam Mostofa, Secretary, DCC 3. Col. Md. Ashfakul Islam, Chief Engineer, DCC 4. Com. Makaudur Rahman Chowdhury, CCO, DCC 5. Khandkar Sujat Ali, Additional Chief Engineer, DCC 6. Md. Mohsin, Senior Assistant Secretary, ERD 7. Eiichiro Chp, Additional Resident Representative, JICA 8. Akiko Bushimata, Deputy Resident Representative, JICA 9. Zaki Md. Ziaul Islam, Program Officer, JICA Bangladesh 10. Dr. Md. Nurul Islam, Deputy Chief Health Offecer, DCC 11. B.M Enamul Hoque, GM Transport, DCC 12. Mr. Abdus Satter, Manager Transport, DCC 13. Aktar Uzzaman Khan, Chief Revenue Officer (additional), DCC 14. Md. Hazrat Ali, Senior Assistant Secretary, MOEF 15. Md. Shehab Ullah, Superintending Engineer, DCC 16. Mr. Naoki Hara, Leader, JICA Expert Team 17. Masahiro Saito, Member, JICA Expert Team 18. Junko Okamoto, Member, JICA Expert Team 19. Ko Takeuchi, Member, JICA Expert Team
Agenda	1. To review the progress of the project & submission of the draft progress report-2 for comments 2. To review the draft Project Design Matrix (Version 2) and finalize the modification 3. To review the proposal of Annual Activity Plan and approve the proposal
Material	1. Agenda of the Meeting 2. Handout of the power point presentations 3. Draft Progress Report-2 4. Logo of the Clean Dhaka Project

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Discussions and Decisions:

At the beginning of the Meeting, Md. Alauddin, CEO, DCC welcome the participants to the 5th Steering Committee Meeting. Then, with the request from Md. Alauddin, Commander Maksudur Rahman Chowdhury, CCO, DCC briefly explained the three agenda of the meeting and then requested Mr. Shehab Ullah, SE, Waste Management Division, DCC to start presentation on the project progress and draft Progress Report 2. The Project Team made a presentation describing agenda of the meeting. During the Fifth Steering Committee meeting the following issues have been confirmed and/ or agreed upon:

1. **To review the progress of the Project and submission of the draft Progress Report-2 for comments**

During the presentation Mr. Shehab Ullah, Superintending Engineer, DCC briefly explained the following issues regarding progress of the Project and Progress Report -2. During his presentation Mr. Shehab mentioned the following issues:

Outline of the Progress Report 2: The report consist of nine chapters, which describes the background, integrated approaches in the Project implementation, overall progress of the project, implementation of the three Pilot Projects, Project management in the period, activities for promotion of community SWM, improvement in efficiency of collection & transportation, activities for final disposal, activities for improvement in SWM accounting, and plan for next fiscal year.

Project Framework: The Project framework depicted the activities to attain five individual outputs of the project, project purposes and overall goal.

Integrated approaches in project implementation: Within the Project three Pilot Projects were implemented to link activities for the five Outputs of the Project to embody the integrated approach to improve the existing condition of SWM:

Progress of the Pilot Project 1: Safety gears were prepared and distributed among the cleaners of ward 36 and 76 and for workers at the Matuail Landfill. Safety and sanitation committee was formed at ward 36 and 76 and Matuail Landfill respectively and Workers' Manual was finalized and distributed to all COs, CIs & Cleaners of ward 36 and 76.

Progress of the Pilot Project 2: It included the renovation and strengthening of functions and activities of the ward office which has resulted into a significant change in the ward level SWM.

Progress of the Pilot Project 3: It has included the introduction of new collection system and improvement of linkage with primary and secondary collection system. Within in Area A, 500 households at Koratitola in ward 76 were supplied with plastic bins and 15,000 paper bags and the households were requested to discharge the waste at marked stations at 4 pm.

In Area B, two new type rickshaw vans were provided to a CBO for harmonizing primary collection with secondary collection by DCC.

Progress of the activities for five Outputs was also briefed as follows:

Progress of the activities of Output 1, Management and Coordination:

- Conducted the administrative tasks required for the establishment of WMD

- Formation of Action Group and carrying out necessary jobs to facilitate the processes of the establishment of WMD
- Monitoring and feed-back system of the activities of the Project has started in monthly Project Team meeting.
- Conducted India study tour where eight DCC counterpart personnel visited three Indian cities, Pune, Hyderabad and Kolkata, to exchange the opinions on SWM, to visit the SWM facilities and to discuss and observe operations of the NGOs and the private sectors.
- Clean Dhaka Ward Contest in 2008 is ongoing where Conservancy Inspector (CI), and community/primary collection service providers shall be awarded for their better performances. Prize distribution ceremony will be held on March 11, 2008
- Project Progress Workshop: The workshop on the Project Progress will be held on March 13, 2008 to review and share experiences of the Project activities of FY1 and FY2 and to consider the necessities for the future activities.
- As a part of the PR activities billboards have been installed, Project logo has been selected, stickers, leaflets, newsletters and other publications have been developed and distributed through different channels.
- Capacity development of staffs has not been conducted systematically because WMD has not yet established and many of DCC counterpart personnel are not sure whether they will be able to work for the WMD after the establishment or not. However, through implementation of the Pilot Projects especially, capacity of the concerned staffs has developed significantly.

Progress of the activities of Output 2, Participatory SWM Program:

- Facilitated the formulation of Ward SWM Guidelines, which is in process of CCO's approval
- Commencement of community activities in ward 76 and continuation of community activities in ward 36.
- Support to primary collection services
- Computer training of the DCC counterpart staffs
- Environmental Education/ Public Awareness Raising program is in progress
- Implementation three pilot projects with collection and transportation group

Progress of the activities of Output 3, Waste Collection and Transportation:

- Conducted analyses based on Time and Motion Survey and Weigh Bridge data from Matuail Landfill and updated number and location of dustbins and containers
- To improve the efficiency of the waste collection and transportation, it is necessary to shorten the loading time, selection of proper vehicle types, increase the number of the trips, and/or to increase the loading weight per trips and improve Mechanical Workshop I.
- Organized series of mini-workshop to transfer knowledge and techniques regarding analyses on collection efficiency, successful completion of GIS training.
- Implemented three pilot projects together with the Community SWM Group

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- Main problems associated with this maintenance and repair of the collection vehicles is the lack of technical staffs, lack of standardized work procedures, tools and equipment and the conventional book keeping method is lingering the decision making processes and hence hampering the services.
- To solve the problems, it is recommended developing the capacity of the mechanics, to procure repair tools and equipment and computerizing the book keeping

Progress of the activities of Output 4, Final Disposal:

- Most of the works at Matuail Landfill Site have been finished successfully.
- All of the control facilities are functioning. Leachate treatment facilities will be constructed soon.
- Control of vehicles at dumping platform
- Control by Landfill Management Unit (LMU) on construction works and operation. Landfill equipment is managed by Mechanical Division -2 of Engineering Department.
- Heavy equipment operators carry out waste compaction according as per the instruction of the landfill instructors
- 24 hour measure of incoming wastes using the truck scale truck scale
- Environmental monitoring plan prepared and environmental monitoring started

Progress of the activities of Output 5, Accounting system necessary for improved SWM

- Installed accounting software and customized for implementation
- Conducted training on accounting software
- Clarified department and operation wise actual cost of solid waste management of FY2007/08
- Calculated operation wise cost of FY2007/08
- Prepared the summary of SWM fixed asset data base

Thanking Mr. Shehab for nice presentation, Md. Alauddin, CEO, DCC, requested the participants to give their views and comments.

- Thanking the Project Team for nice efforts, Mr. Eiichiro Cho, Additional Resident Representative, JICA Bangladesh Office, mentioned that the establishment of WMD is very much important for proper SWM in Dhaka City, and he asked latest information on the progress of the establishment of WMD.
- In this regard, Md. Alauddin informed that there have been a good progress of the establishment process of WMD, on March 8, 2008 there was a meeting at Ministry of Establishment to facilitate the finalization of the WMD organogram. On March 10, 2008 there will be another meeting at Ministry of Establishment to finalize the WMD, which perhaps will be the last meeting in this regard. Md. Alauddin also informed that after approval of Ministry of Establishment the file will be submitted to Ministry of Finance and the finally the Secretary Committee will give the final approval. Md. Alauddin also expected the above process to be completed by the end of March 2008. Mr. Cho acknowledged good progress and DCC's efforts

on this matter.

- Appreciating the success of the implementation of Pilot Projects, Mr. Naoki Hara, Leader of JICA Expert Team highlighted the requirements of integrated support and coordination of DCC counterparts for SWM and requested to continue to support in the next year for the continuous betterment of SWM
- At this point Md. Alauddin inquired about the present requirements of DCC's intervention for the Project. In reply Mr. Hara requested to dispatch the allocated budget for the Community SWM, to search for proper method to shorten the loading time of collection vehicles and to increase the resources at Workshops. Mr. Hara also informed that at Matuail Landfill Site no soil cover is done due to lack of heavy equipments and hence requested to facilitate the requirements. In reply Mr. Chowdhury stated that dispatching budget of Community SWM is not a problem, besides he insisted JICA to give support by providing vehicles, container etc.
- Appreciating the efforts made the Project Team, Ms. Akiko Bushimata, Deputy Resident Representative, JICA Bangladesh Office informed that observing the success of the activities of the renovated ward office at Ward 36. For expansion of the activitiy, she inquired about the available lands to construct the Ward Offices. In Reply, Mr. Chowdhury assured that some lands are available and DCC will complete to finalize the list of the lands of DCC.
- Then Ms. Bushimata inquired the procurement plan and budget for tools and equipments at Mechanical Workshop 1. In reply Mr. Col Md. Ashfakul Islam, Chief Engineer, DCC assured that DCC is also considering the issue sincerely and working on it. Besides, Mr. Ashfakul also mentioned about gradual improvement of the workshops.
- At this point, as Md. Alauddin was about to leave for other meeting, Mr Cho inquired about approximate specific time schedule for the establishment of WMD. In reply Md. Alauddin mentioned that as per his perception, the earliest possible time to start WMD functioning would be 1st of April, and the latest possible time would be 1st of June, 2008. Besides Md. Alauddin highlighted that after approval of Ministry of Establishment, it can be unofficially be assumed as the approved by the Government and other processes of approval by the Ministry of Finance and Secretary Committee are merely the Government's official procedure. To answer a question from Mr. Hara, Md. Alauddin assured to complete the transfer and nomination processes for the staffing of WMD by seven (7) days after the approval of WMD by the Ministry of Establishment.
- After the above discussion, Md. Alauddin left the meeting, handing over the chairmanship of the meeting to Mr. Ashfakul. Then emphasizing the enhancement of workshop facilities, Mr. Hara informed that as JICA Expert Team do not have any expert to give training to the mechanics at workshop, it is necessary to find out the method/ steps to be followed to improve the capacity of the staffs at workshops. At this point Mr. Chowdhury also highlighted the shortage of tools and equipments at workshop. Mr. Ashfakul proposed to provide a list of important tools and equipments so that he can arrange them at an earliest possible time. In reply Mr. Hara informed that the Progress Report 2 includes the list of tools and equipments. Then replying a query from Ms. Bushimata, Mr. Ashfakul informed that the bulk budget of DCC can be used to procure necessary tools and equipment.

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- Mr. Chowdhury emphasized that DCC staffs are well experienced and it is necessary to think about providing logistic support to DCC rather than the training and other capacity developments initiatives. Emphasizing the urgency of logistic support required by DCC, Mr. Chowdhury requested Mr. Hara to take necessary initiatives. In reply, Mr. Hara informed that the Clean Dhaka Project is a technical cooperation project where there is no provision of giving logistic supports to DCC. Rather, the project will be providing equipment and materials, which will be necessary to develop the capacity of DCC staffs and SWM as a whole.

Then Mr. Hara gave presentation on other agenda of the meeting

2. To review the draft Project Design Matrix (Version 2) and finalize the modification:

Explaining the logical frame work and structure of Project Design Matrix, Mr. Hara mentioned that as establishment of Waste Management Department (a Precondition the Project) will take place by the end of March 2008 and the Project aims Capacity Development of Waste Management Department from the beginning; hence the expression of the five outputs are necessary to be revised. To revise the expression of the outputs, the objectively verifiable indicators (OVIs) are also revised. Then Mr. Hara explained the following revised outputs of the project

1. Capacity for management and coordination of solid waste management activities is improved.
2. Capacity for participatory solid waste management program is improved.
3. Capacity for solid waste collection and transportation is improved.
4. Capacity for operation and management of final disposal is improved.
5. Capacity for financial management on solid waste management is improved.

Then Mr. Hara explained briefly the changes in the objectively verifiable indicators (OVIs) of each output.

After the presentation Mr. Hara mentioned that in the Steering Committee meeting held on May 30, 2007, it was discussed that Activities could be flexible while Outputs should be fixed. Besides some Activities in the previous version were defined in details and did not allow flexible implementation, and some Activities were misplaced to some other group; hence the activities of each outputs have been revised. Mr. Hara briefly explained the modified activities of each output.

1. To review the proposal of Annual Activity Plan and approve the proposal

Then Mr. Hara described the ward based approach for the FY (2008/09), where following issues will be highlighted.

- The policy of intensive resource input to the focal areas will continuously be applied.
- Pilot Project should be continued and expanded according to the M/M on February 20, 2008
- Pilot Project will be evolved to Wads-based Approaches (WBA).
- Collection and Transportation Improvement Paper stated 10 charters. Those will be embodied in WBAs.
- WBAs will give good opportunities of "Learning by doing for the staff of WMD.

- After the above presentation Mr. Akter Uzzaman Khan, Chief Revenue Officer, DCC asked to clarify the revenue managing under the output 5. In reply Mr. Hara informed that managing revenue will include reviewing the holding tax documented during Master Plan formulation and re assessing the holding tax and to improve the efficiency of revenue generation through better and improved collection system. At this point, Mr. Akter informed that DCC has already taken initiative to improve the efficiency of revenue collection. To support it, Mr. Hara mentioned about public awareness initiatives to be adopted.
- Then Mr. Hara emphasized that, at the end of FY (2008/2009) mid-term evaluation mission will come from Japan to evaluate the project and at that time they will be evaluating the project progress and success based on each of the outputs and there activities. Hence it very important to make all the activities under each output functional and fruitful through specific efforts by the members of each group.

Mr. Hara requested to all members of the St/C to check the Progress Report 2 and if there are comments then send them in writing by March 13, 2008. If the participants do not send the comments, the Project Team will deem that the Draft Progress Report 2 distributed in this meeting can be finalized.

Then Mr. Hara also asked the participants' whether the modified PDM can be finalized or not. In reply, Mr. Ashfakul as the acting Chairman replied that the Project Team has to wait for the comments for the modified PDM in the same way as the comments for the Progress Report 2. If there are comments from St/C members, those have to be taken into account.

Then thanking all the members present, Mr. Ashfakul Islam, Chief Engineer, DCC concluded the meeting.

(Mr. Mohammad Alauddin)
Chief Executive Officer
Dhaka City Corporation

(Mr. Naoki Hara)
Chief Advisor
JICA Expert Team

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6) Sixth Steering Committee Meeting

Sixth Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Sixth Steering Committee Meeting
Date and Time	October 19th, 2008 14:00 – 15:30
Venue	Room # 212, DCC
Attendant	1. Mohammad Alauddin, Chief Executive Officer 2. Col. Md. Ashfakul Islam, Chief Engineer 3. Col. (Dr.) Md. Showkat Ali, Chief Health Officer 4. Commander M. R Chowdhury, Chief Waste Management Officer 5. Md. Sharfuddin Khan Jilani, Chief Revenue Officer 6. B M Enamul Hoque, General Manager (Transport) 7. Syed Qudratullah, Superintending Engineer, DCC 8. Dr. Engr. Tariq Bin Yousuf, PD, Landfill Improvement Project 9. Abul Hasnat Md. Ashraful Alam, Executive Engineer 10. Md. Shafikul Islam, Waste Management Officer (In charge) 11. Junko Okamoto, Community Mobilization/Communication 12. Masaharu Takasugi, Waste Collection Vehicle and Equipment Maintenance Management 13. Akio Ishii, Collection and Transportation 14. Mahmoud Riad, Deputy Chief Advisor, JET 15. Zaki Md. Ziaul Islam, Program Officer, JICA Bangladesh Office 16. Mr. Jin Hirosawa, Resident Representative, JICA Bangladesh Office 17. Mr. Eiichiro Cho, Senior Chief, JICA Bangladesh Office 18. Mayuko Takahashi, JOCV 19. Ms. Rifat Ahmad,JET 20. Md. Shoriful Alam Mondal, JET 21. Mr. Raqebul IslamJET 22. Md. Hamidullah Sarkar, JET 23. Md. Mostafizur Rahman, JET 24. Mr. Pallab Debnath, JET
Agenda	1. Progress Report 3 Presentation 2. Discussions
Material	1. Agenda of the Meeting 2. Progress Report 3 (draft) 3. Directives of Waste Management Department

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Discussions and Decisions:

After welcoming all the members present, Commander Maksudur Rahman Chowdhury, CWMO, DCC introduced Mr. Jin Hirosawa as the Representative of JICA Bangladesh office and wished continuous cooperation, guidance and outmost support from him for the Clean Dhaka Project. Then briefly explaining the importance of holding the Steering Committee Meeting, CWMO, with the permission of CEO, invited Dr. Tariq Bin Yousuf, PD, LIP to make the presentation on the Progress Report 3.

- At the beginning Dr. Tariq delightfully informed that this Progress Report has been prepared by the counterparts of each group. Twenty copies of Progress Report 3 (draft) were submitted to the participants. Then briefly explaining the background of the project, project frameworks: a) PDM (Project Design Matrix), b) Overall Goal, Project Purpose, Outputs and respective Activities and c) WBA (Ward Based Approaches), Dr. Tariq started explanation of the progress of individual outputs with output 1.

Output 1 – Management and Coordination of SWM: Dr. Tariq explained the progress of this output as follows:

- Approval process to establish WMD is almost completed and engineering wing has been established but final approval and recruitment process is still pending and directives have been verbally authorized only.
- Under the Project activity to strengthen human resources and institution of WMD, Hanoi study tour was organized during September, 2008. Besides renovations of three Ward offices have been completed and construction of three new ward offices is ongoing. However budget, asset transfer, and staff recruitments are delayed which need more attention and it is necessary to put the theory to practice regarding Ward SWM by suitably utilizing the ward SWM offices.
- To raise awareness and PR on SWM, WMD launching event took place, C/Ps participated in eco-bag and sticker campaigns, and news letter and website have been maintained but more participation of C/Ps in PR planning needs to be reinforced.

Output 2 – Participatory SWM Program: Mr. Shafiqul Islam, WMO, DCC briefed the progress of this output as follows:

- To organize community and support community level SWM activities community activities are continuing in wards 36 & 76 where the Project activities were started in the Project 2nd Year. In this Project 3rd Year, under WBA 3, kickoff meetings were held at Wards 63, 69, 75 and 44, and CUWGs (Community Unit Working Group) have been formed in Wards 69 and 75. However formation of CUWG in Ward 63 is delayed.
- To improve primary collection permission and monitoring system progressive steps have been taken by CWMO and consensus within Group 2 is achieved to propose improving existing system. However more community centered approach is needed and development of the formats and training materials for the CIs is under preparation.

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- To coordinate among community, PCSP and DCC, CAPs (Community Action Plan) for CUWG in wards 69 and 75 have been prepared. Through coordination significant decrease in waste littering around containers has been achieved and in this regard more effort is necessary to coordinate with the ward commissioners

Output 3 – Solid Waste Collection and Transportation: Mr. Abul Hasnat Md. Ashraful Alam, Executive Engineer, DCC briefed the progress of this output as follows:

- Weigh bridge data collected from Matuail Sanitary Landfill site has been analyzed. From the analysis 21 LPT (Low Performing Trucks) have been identified. Besides, gaps between existing monitoring systems and improper record keeping have been identified, which need special attention. But main difficulty is to obtain accurate data.
- To improve efficiency of collection system, under WBA 4, planning for new collection and collection improvement in wards 36, 44, 63, 69 and 75 has been done and preparation of road maps for allocation plans of 127 new trucks (from grant aid mission 100 trucks and from Amin Bazar Project 27 trucks) is underway. However manpower in WMD to implement the road map needs to be reinforced.
- To improve system of repair and maintenance of equipments problem analysis from planning, personnel, technical, managerial, and financial aspects has been done. However design of training program for management, mechanics and drivers (on maintenance) is required.

Output 4 – Operation and Management of Final Disposal: Dr. Tariq briefed the progress of this output as follows:

- Landfill operation during the wet season was smooth. Leachate treatment at Matuail is delayed due to the need to dewater the ponds after the heavy rainfalls. Frequent breakdown of heavy equipment sometimes hinders the landfill operation. ECNEC for Amin Bazar landfill site has been approved.
- To operate and manage sanitary landfill weekly site meetings are held to improve coordination among departments and successful on-the-job training was held for site staffs. However more permanent staff allocation to the site is needed.
- For environmental monitoring landfill gas, leachate and surface water is monitored regularly by LMU and awaiting to engage expert laboratory to carry out detailed monitoring on a periodical basis. BELA issue at Amin Bazar is still unresolved.

Output 5 – Financial Management on SWM: Dr. Tariq briefed the progress of this output as follows:

- To develop financial reports, data is now collected, input and checked every month. However some departments are irregular in providing data. FMG needs a full-time computer operator to deal with the data.

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- For the preparation of proposal of financial plans, and establishment of WMD's first budget, formation of a budget committee has been proposed. Large gap between SWM expenditures and revenues has been identified. Hence it might be necessary to reflect service wise breakdown of WMD revenue and cost figures in DCC budget for better understanding and planning of budget allocation.
- As DCC's Store & Purchase Department is overloaded, WMD may support for the improvement of procurement and payment process. However proposals for improvement need to be settled.

➢ Then after briefly explaining the progress of WBA activities Dr. Tariq mentioned other major issues related to project progress as follows:

1. Delay in WMD official approval delays the recruitment of staff for WMD.
2. Formal authorization of the Directives by DCC would strengthen the position of WMD within DCC and its personnel.
3. Authorization of Ward SWM Guideline
4. Systemization of PCSP approval and monitoring
5. It is necessary to allocate the trucks based on a comprehensive plan for efficient operation and also collection service expansion.
6. Monitoring, evaluation and improvement of collection trucks operations needs to be done based on sufficient and reliable data.
7. The speedy filling up of the Landfill Management Unit or the posts allocated to disposal
8. The landfill operation requires suitable and permanent staff stationed at the landfill site and working within one structure and chain of command.
9. Set up the necessary organization to plan, manage and dispense the WMD budget.
10. Increase SWM revenue to meet increased operation costs

Then thanking Dr. Tariq for his nice presentation, Mr. Mohammad Alauddin, Chief Executive Officer, DCC requested the participants to give their kind comments and queries.

➢ Thanking the project team for nice efforts, Mr. Eiichiro Cho, Senior Chief, JICA Bangladesh Office inquired about the status of final approval of WMD and plan for new recruitment for WMD. In reply Mr. Alauddin informed that Finance Ministry has already approved WMD. He also informed that DCC has planned to finish recruitment process of WMD by November, 2008 and possibly new faces may start working for WMD from Middle of December, 2008 or latest from the beginning of January, 2009. To reply to another query from Mr. Cho, Mr. Alauddin informed that he has already discussed with Chairman of NBR and Advisor of Local Government regarding VAT and TAX issue of the Grant Aid, and it has been assured that Bangladesh Government will manage the VAT and TAX.

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- Then highlighting the importance of Mid Term Evaluation mission for Clean Dhaka Project, Mr. Cho informed that the Mission will jointly evaluate the project activities to find out sustainability of different project activities and make conclusion on future activities. In this regard Mr. Cho requested strong support from DCC side and to assign DCC staffs to participate in the project evaluation with the mission. In this regard CWMO proposed, and CE approved to assign Dr Tariq and Mr Hasnat.
- At this point Mr. Alauddin inquired about the main steering points of the project to give special attention. In reply appreciating the efforts made by the C/Ps of DCC, Mr. Riad, JICA Expert Team, highlighted that so far project activities were rather slower due to delay in finalization of WMD, but as now WMD is almost approved, new system needs to be adopted very efficiently and new department has to be functioning effectively. In this regard Mr. Riad requested to speed up the progress of project activities starting with recruitment process. In response Mr. Alauddin asked Dr. Tariq to start advertizing of recruitment of WMD immediately.
- Then emphasizing objectives of the Midterm Evaluation Mission, Mr. Riad informed that the mission will be focusing on the improvement of project activities, looking for the problems and trying to fix the issues for future approach for project activities. At this point Mr. Alauddin strongly insisted that DCC C/Ps shall work in joint collaboration with the experts and should be faster and more sincere than before to achieve the goals of the project and success of WMD. Appreciating strong leadership of Mr. Alauddin, Mr. Cho expected faster progress of the project in future.
- Then after obtaining the permission of the CEO, Mr. Riad invited comments from members of the JICA Expert Team.
- Mr. Masaharu Takasugi, Expert, JET briefly explained the following issues regarding collection and transportation group (CTG) activities.
    - By December, 2009 127 new trucks including compactors and container trucks shall be added to DCC conservancy fleet. Hence it is very urgent to define effective plan of using the new additions.
    - At present CTG is analyzing weigh bridge data collected from Matuail landfill site to determine LPT (Low performing trucks) and planning to replace some of the old trucks with new ones.
    - For comprehensive planning of using new trucks, it is very urgent to determine the present volume of waste generated in DCC. Hence it is necessary to measure the waste carried to Amin Bazar landfill site but security is a big problem during night time in Amin Bazar.
    - CTG is preparing GIS maps of DCC wards and after collection of existing SWM conditions by respective conservancy inspectors will update the maps digital data.
    - CTG is also working on the service areas of waste collection and transportation so that if necessary old service areas can be replaced with new service areas.

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- Then Ms. Junko Okamoto, Expert, JET briefly explained the following issues regarding community group activities:
  - Progress of the capacity development of C/Ps of community group is quite satisfactory and there is significant number of C/Ps, who are becoming qualified to lead the community based activities of SWM at Ward level.
  - Working in community level is very difficult and long process, hence it is necessary to continue WBA approach as well as community activities. Continuous support from DCC's high officials is needed.
- Then Mr. Sharfuddin Khan Jilani, CRO, DCC inquired about the level of approval of WMD Directives and meaning of Dr. Tariq's comment that "WMD revenue and cost figures are not reflected in DCC budget".
  - In reply Dr. Tariq and as well as Mr. Hasnat explained that by that statement reflection of service wise cost of WMD in the budget was very important. Dr. Tariq also explained that if cost of each service to deal per ton waste is reflected in the budget then it will be easier for the policy makers to plan and allocate budget efficiently. Supporting Dr. Tariq's explanation Mr. CWMO also emphasized necessity to determine service costs per ton of waste. In this regard agreeing to the importance of break down of budget, Mr. Jilani mentioned that main budget should not be detailed rather break down of each service cost shall be detailed in the Annual Plan or Annual Work Plan of individual department.
  - Regarding level of approval of WMD directives Mr. CWMO informed that Honorable Mayor of Dhaka City has verbally approved the directives and now will be proceeding step by step toward approval of directives. To this end, Mr. Riad mentioned that written approval by highest official will give more value to the directive and credibility to serve as the basis for formulating future active plans. And to answer another query from Mr. Jilani, Mr, Riad informed that Bengali version of WMD directives was being prepared by the Counterparts.
- Colonel Ashfakul Islam, Chief Engineer, then enquired on the plan of operation concerning implementation of the directives. In reply Mr. Syed Qudratullah, SE, WMD said that the activities of the Project are implemented based on the plan of operation, and that to implement those activities budget is requested.
- Then Mr. Cho introduced the new JOCVs, engaged for environmental education programs, Ms. Mayoko Takahashi and Mr. Hirohisa Matsuyama and briefly mentioned their activities.
- Then in closing remarks Mr. Alauddin mentioned the following issues
  - The need to catch up after the 6 - 7 months delay in approval of WMD,
  - Highlighting the long gap between 5th and 6th steering committee meeting Mr. Alauddin insisted to hold steering committee meeting more frequently preferably once every three months to steer the project progress more effectively.

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- As approval of WMD is at the final stage, recruitment process can be started from the following day, hence Mr. Alauddin asked Dr. Tariq to take necessary initiatives.
- Receiving 100 vehicles through grant aid of Japan government is a big achievement. DCC has been closely following up the isses with LGRD and Planning Commission.
- As legal issues of Amin Bazar landfill site have not been resolved yet, it is very urgent to settle down the legal issues first before commencing any activity of Amin Bazar landfill site. In this regard Mr. Alauddin asked Dr. Tariq to take necessary initiatives.
- Mr. Alauddin asked JICA Experts to prepare the key issues that may require special attention so that further meeting may be arranged to resolve the issues with priority.
- Referring to Ms. Okamoto's comments Mr. Alauddin mentioned that DCC still lags behind in respect of waste management but this trend has to be changed as the Government is also considering the WMD very special, hence decided to create this new department. We urge everybody to work more actively and efficiently from now on.
- Regarding up coming Mid Term Evaluation Mission, Mr. Aluddin ensured to provide full support from DCC side to make the mission objective successful and requested that the mission meet with him anytime, and as required for project purpose to work with Mr. CWMO.

➢ Finally the Steering Committee Members were requested to review the Progress Report 3 by October 22, 2008 and give individual's kind comments so that it can be finalized by October 23rd, 2008.

Then thanking all the members present, the Chair declared the end of the Meeting.

(Md. Alauddin)
Chief Executive Officer
Dhaka City Corporation

for (Mahmoud Riad)
JICA Expert Team

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7) Seventh Steering Committee Meeting

Seventh Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Seventh Steering Committee Meeting
Date and Time	March 3rd , 2009 15:30 – 16:30
Venue	Room # 212, DCC
Attendant	1. Md. Nurul Haque, Chief Executive Officer, Dhaka City Corporation 2. Col. Md. Ashfakul Islam, Chief Engineer, Dhaka City Corporation 3. Col. (Dr.) Md. Showkat Ali, Chief Health Officer, Dhaka City Corporation 4. Commander M. R Chowdhury, Chief Waste Management Officer, Dhaka City Corporation 5. Nasreen Akhtar Chowdhury, Deputy Secretary, Economic Relation Division (ERD) 6. B M Enamul Hoque, Secretary, Dhaka City Corporation 7. Dr. Ashraf Ali, Associate Professor, Bangladesh University of Engineering & Technology (BUET) 8. Syed Qudratullah, Superintending Engineer, Dhaka City Corporation 9. Md. Nurun Nabi, Chief Accounts Officer, Dhaka City Corporation 10. A.S.M.Emdadul Dastagir, General Manager (Transport), Dhaka City Corporation 11. Dr. Engr. Tariq Bin Yousuf, Project Director Landfill Improvement Project at Matuail,DCC 12. Abul Hasnat Md. Ashraful Alam,Executive Engineer,DCC 13. Eiichiro CHO,Senior Representative,JICA Bangladesh Office 14. Jin HIROSAWA, Representative,JICA Bangladesh Office 15. Md. Ziaul Islam, Program Officer, JICA Bangladesh Office 16. Mahmoud RIAD, JICA Expert Team 17. Akio ISHII, JICA Expert Team 18. Masahiro SAITO, JICA Expert Team 19. Noboru OSAKABE, JICA Expert Team 20. Ko TAKEUCHI, JICA Expert Team 21. Mostafizur Rahman, JICA Expert Team 22. Md. Shoriful Alam Mondal, JICA Expert Team 23. Pallab Debnath, JICA Expert Team 24. Md. Hamidullah Sarkar, JICA Expert Team
Agenda	1. Brief project background explanation 2. Progress Report 4 - Draft 3. Situation of WMD 4. Discussion
Material	1. Agenda of the Meeting 2. Progress Report 4 (draft) – 20 Copies

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Discussions and Decisions:

After welcoming all the members present, Commander Maksudur Rahman Chowdhury, CWMO, DCC requested the participants to introduce themselves. Then with the permission of Mr. Md. Nurul Haque, Chief Executive Officer, DCC, Mr. CWMO invited Dr. Tariq Bin Yousuf, PD, LIP to give presentation on brief project background and the contents of the Progress Report 4 (Draft).

1. Brief project background explanation:

- After brief description of the chronology of the project Dr. Tariq outlined the overall framework of the Clean Dhaka Project. He mentioned that considering the project purpose to improve the solid waste management services of Dhaka City Corporation overall goal of the project is "The solid waste management services are sustained and sanitary environment of the city is improved". He also mentioned that to meet the purposes of the project different activities are conducted under five individual outputs as follows:
  - Output 1: Management and coordination
  - Output 2: Participatory solid waste management
  - Output 3: Collection and transportation
  - Output 4: Operation and management of final disposal
  - Output 5: Financial management

2. Brief project background explanation:

- At the beginning of the presentation on Progress Report 4, Dr. Tariq mentioned that up to now the Project has achieved the following milestones:
  - Establishment of WMD
  - WBA (Ward Based Approach) approach to waste management
  - First Sanitary landfill at Matuail was constructed and is in operation
  - Landfill Management Unit is functioning
  - Aminbazar Landfill Project was approved by ECNEC (2008-2010) and implementation has started this year.
  - Data on collection points and routes have been collected and input in GIS maps for 84 wards
  - Joint Mid-term Evaluation by JICA and DCC was done in Nov '08, and the Project was Rated "B"
  - Exchange of Notes for Environmental Grant Aid towards low carbon emission between the two Governments of Bangladesh and Japan was signed on 18th Feb' 09
- Dr Tariq then explained that the Ward Based Approach program which focuses Project resources in target wards and links the SWM sectors together was very useful to improve solid waste management in DCC. Dr. Tariq mentioned that the project has been implementing four WBAs as follows:
  - WBA1: New construction or renovation of existing offices to strengthen ward office function.
  - WBA2: With the goal to improve the working conditions of DCC three approaches are considered under WBA2; workers safety gears distribution, formation of work safety & sanitation committee and introduction "workers manual" & reorganize the work methods.
  - WBA3: To support community activities through organizing CUWG (Community Unit Working

Group) and WSWMC (Ward Solid Waste Management Committee).

- WBA4: With the goal to improve collection efficiency two approaches are considered under WBA4; introduction of new collection system and improvement of conventional collection system.

➢ Then Dr. Tariq summarized the project achievements and challenges of each output in the 3rd JFY as follows:

- Output 1: (1) Strengthening of ward SWM office, (2) Compilation of 7 good practices and (3) Intensified PR activities
- Output 2: (4) Linking Community Action Plans with WBA 4A, (5) Strengthening coordination between Community, PCSP and DCC and (6) CUWG training by C/Ps
- Output 3: (7) Weighbridge data collection and use for collection trucks operation monitoring, (8) Introducing new collection system in WBA 4A and (9) Extension of WBA2 to 15 wards
- Output 4: (10) Smooth LF operation in wet season, (11) Weekly operation coordination meetings at Matuail LF, and (12) Starting improvement project of Amin Bazar LF
- Output 5: (13) Arrangement of WMD fixed assets, (14) Incorporation of FY 2007/'08 SWM expenditure with revenue, and (15) Initiation of the preparation of Budget Committee for WMD.

➢ The Project efforts to strengthen SWM at the ward level included strong monitoring of cleansing activities, linkage between waste collection & transportation, construction of ward offices, and setting up of complaint procedures. And for public awareness implementation of awareness raising programs, development of communication materials, school education program, and media campaign have been prepared.

➢ Then comparing the previous and present conditions of Matuail Landfill Dr. Tariq mentioned that Matuail is operating 24 hours a day. He briefly described the weighbridge operation, vehicle washing facility, high performance of the steel plates during the wet season, construction of working road and platform, leachate collection system, surface drainage system, gas venting facility, leachate treatment facility and regular monitoring of the environment, and weekly coordination meeting between LMU, Mechanical and Transport department at Matuail Landfill Site for ensuring the sanitary condition.

➢ Dr. Tariq explained the activities of the Project's Financial Management Group for compilation of financial reports for the waste management costs of DCC by which it is now possible to know detailed expenditures for the waste management sector in DCC.

3. The Situation of the Waste Management Department (WMD)

➢ Then with the permission from Mr. CEO, Mr. Riad presented the present situation of WMD. To describe the necessity of WMD Mr. Riad mentioned that as different individual entities are involved in the whole SWM process, it is very difficult to control and ensure smooth operation of SWM. Hence it is very much important to establish the WMD to have the ultimate responsibility to operate all activities of SWM in DCC.

➢ Then to describe the recent chronology of WMD establishment Mr. Riad said that on June 8th, 2008, LGRD sent the proposal for the WMD to the Ministry of Finance. On July 21st, 2008, the Monitoring Section of the Ministry of Finance approved the proposed WMD organization chart. Upon the approval of the Ministry of Finance, WMD Inauguration Ceremony was held on August 14, 2008. On October 27, 2008, Ministry of Finance's Implementation Wing issued an order to LGRD&C regarding the salary grade of waste management department. On January 25th, 2009, DCC sent two documents to LGRD&C, one concerning requests to abolish some posts and the second to revise the salary scale of the WMD.

- Mr. Riad stressed that the project is a capacity development project and without staffing of the WMD it is difficult to achieve the project goals as well as to meet the requirements of JICA. So far only 14 staffs have been assigned by Honorable Mayor for WMD. However as establishment of WMD is delayed considerably, existing staff members are becoming less motivated with the passage of time. Under these circumstances it is very urgent for DCC to recruit the WMD staff. Mr. Riad also mentioned that as per the proposed WMD organization all conservancy trucks and drivers under the Transport Department would be shifted to WMD, but the Drivers Union had already informed that they are opposing such a transfer. By next year 127 new waste collection trucks will be introduced into service but it is still not clear who will be responsible for their operation. Besides he emphasized that so far DCC engineers had been successfully engaged in procurement and construction related works but as sophisticated SWM facilities (as landfill) and new compactor trucks are introduced it becomes increasingly necessary that engineers should be suitably engaged for the operation and management as well. Moreover the future planning for operation, management and maintenance more manpower set-up will be needed; which cannot be achieved without WMD. Mr. Riad also mentioned that the Project Team understood that only aft er issuance of the final Government Order it is possible for DCC to transfer/ employ the WMD staff, transfer asset related to SWM to WMD and prepare for budget allocation.
- Then presenting the organization of WMD Mr. Riad explained that the present Conservancy Department would be transferred into the WMD with relative ease but the challenge lies with setting up and staffing the engineering wing which is a new entity.
- Mr. CEO ensured his support to smoothly establish the WMD. Upon Mr. CWMO's request Mr. Abul Hasnat Md. Ashraful Alam, Executive Engineer informed that at present there are basically two issues regarding establishment of WMD; salary scale and abolishment of about 59 posts. He also informed that during January, 2009 DCC sent a letter to the ministry with the answers to the inquiries. But the file processing is slow and might have become delayed and hence some initiatives were needed to hasten the process and obtain the final approval. Mr. Hasnat also mentioned that the secretary at the ministry was not well informed about the present status of WMD and may be under the misunderstanding that everything was progressing smoothly with WMD. It was therefore necessary to explain to him about the present situation in order for him to hasten the approval process.
- At this point Mr. Syed Qudratullah, SE, WMD mentioned the sustainability of the project strongly depends on allocating the required manpower to implement all the project activities. He also mentioned that although all existing staffs are working very hard but shortage of manpower is hindering the progress of the project and management of landfill improvement as well as smooth SWM in DCC and hence it is very much urgent to have the permanent staffs immediately. Moreover Drivers appointment for newly coming vehicles will be needed at appropriate time to fully operate and function under WMD.
- Then Mr. Echiro CHO, Senior Representative, JICA Bangladesh Office strongly urged Mr. CEO that DCC should take the establishment of WMD issue seriously. Then mentioning last month's agreement signed between JICA and ERD for the Grant Aid, Mr. Cho stated that even at this time JICA may suspend both the Technical Assistant Project and Grant Aid Project if establishment of WMD was not confirmed. In response Mr. CEO again ensured that DCC will deal with the issue sincerely and will solve the problem within the earliest possible time.
- To this Mr. CWMO informed that almost 95% of the work has been done for the establishment of WMD and now some official proceeding remains to be completed which requires some official pushing to expedite the

process. Mr. CEO said that he will be talking with Secretary of the ministry to discuss about a solution of the problem. Then Mr. Cho requested Nasreen Akhtar Chowdhury, Deputy Secretary, ERD to help sincerely in this regard and Ms. Nasrin acknowledged the request.

4. Discussion:

- Mr. Hasnat informed that from the budget summary it is evident repair cost has been reduced significantly and there is an increase in fuel cost. Mr. CWMO informed that litter consumption was reduced from last year but due to oil price hike fuel cost has increased from last year.
- Col. Md. Ashfakul Islam, Chief Engineer, DCC appraised that the Project activities are improving gradually but the problem is with the shortage of Engineers to implement the project. In this regard he informed that within the Engineering Department there is a shortage of Engineers as well hence he is also unable to depute some Engineers to WMD. But once WMD is established then it will be possible to recruit new Engineers as required and he also stressed the need to establish WMD quickly.
- To this end Mr. Riad highlighted that DCC has made much effort to develop the landfill site, and new trucks are coming soon; the landfill and trucks have to be operated properly otherwise surrounding environment may become polluted. Mr. CE inquired about whether LMU is providing soil cover or not at Matuail LF as without soil cover it is not possible to ensure sanitary landfill operation. In reply Dr. Tariq mentioned that as soil is expensive to use as daily cover, it has been decided to use the old waste instead as cover. He also mentioned using old waste as cover has an advantage to help the semi-aerobic system by increasing the decomposition process utilizing the micro-organism present in the old waste. Dr. Tariq also mentioned that final soil will be done using the soil.
- Mr. CE inquired about taking initiatives to start composting in DCC. In reply Dr. Tariq informed source segregation has been started in DCC and without proper source segregation the produced compost may be harmful for the plants as ingredients may have harmful materials. He also informed that at present DCC is using old wastes to construct working roads in the landfill site. Mr. CE emphasized that Chittagong City Corporation is doing good composting business. Then it was decided to visit the compost plant in Chittagong City Corporation during the 3rd Bangladesh SWM Conference.
- Then Mr. CE proposed to use bio-degradable bags for waste dispose by individual households. In response Mr. CWMO informed that from DCC would implement a model project in Dhanmondi area.
- Mr. Cho inquired about the theme of DCC's presentation during the 3rd BSWMC. In reply Dr. Tariq mentioned that during the last conference all city corporations shared their individual waste management practices and this time all city corporations will be focusing on specific practices and in this regard DCC will be presenting on WBA, Policy guidelines and networking. Mr. Syed Qudratullah, SE, WMD also expressed the need for coordination with all the city corporations and focus on developing policy guidelines on SWM for all cities.

5. Progress Report 4

Then Mr. Riad mentioned that 20 copies of the draft of Progress Report 4 have been submitted to those present and requested the members to give any comments they may have on the report contents to the Steering

Committee Secretary, Mr. Syed Qudratullah, SE, by next Sunday, March 8th, 2009. Mr. Nurul Haque, CEO thanked the Project Team for preparing the Progress Report 4.

Then thanking all the members present, Mr. Nurul Haque declared the end of the Meeting.

Md. Nurul Haque
Chief Executive Officer
Dhaka City Corporation

Mr. Mahmoud Riad
JICA Expert Team

8) Eighth Steering Committee Meeting

Eighth Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Eighth Steering Committee Meeting
Date and Time	July 2nd , 2009 15:30 – 16:30
Venue	Room # 212, DCC
Attendant	1. Md .Nurul haque, Chief Executive Officer (CEO), Dhaka City Corporation (DCC) 2. Ms. Nasreen Akhtar Chowdhury, Deputy Secretary, Economic Relation Division (ERD), Ministry of Finance 3. Col. Maksudur Rahman, CWMO, DCC 4. Mr. Moniruzzaman, CRO (DCC) 5. Col Md. Abdul Quadir, Chief Engineer, DCC 6. A S M Shaheen Reza, CS&PO 7. A.S.M. Emdadul Dastagir, General Manager (Transport), DCC 8. Dr. Tariq Bin Yousuf, Project Director Landfill Improvement Project, DCC 9. Mr. Syed Qudrat Ullah, Superintending Engineer, Waste Management Department (WMD), DCC 10. Mr. Abul Hasnat Md. Ashraful Alam, Executive Engineer (Collection and Transport), WMD, DCC 11. Mr. CHO Eiichiro,Senior Representative, JICA Bangladesh Office 12. Mr. Hirosawa Jin, Representative, JICA Bangladesh Office 13. Md. Ziaul Islam, Program Officer, JICA Bangladesh Office 14. Mr. Naoki Hara, JICA Expert Team (JET) 15. Mr. Akio ISHII, JET 16. Ms. Rifat Ahmad, JET 17. Mr. Mostafizur Rahman, JET 18. Md. Shoriful Alam Mondal, JET 19. Mr. Pallab Debnath, JET 20. Md. Shahinur Rahman, JET
Agenda	➢ Implementation Plan for the 4th year ➢ Review of Objectively Verifiable Indicators of PDM of the Project ➢ Staffing to Waste Management Department
Material	1. Power Point Slides for the above three agenda 2. Project Implementation Plan for the 4th year

After welcoming speech by SE of WMD, Mr. Qudrat Ullah to all the members present, Commander Maksudur Rahman Chowdhury, CWMO, DCC requested participants to introduce themselves to other members of the Steering Committee (St/C). Then with the permission from Md. Nurul Haque, CEO, DCC, Mr. CWMO invited Mr. Naoki Hara, Chief Advisor of JET to give presentation. At the beginning Mr. Hara explained that presentation of the meeting was prepared and would be made by him on behalf of the Project Team since the Team has already started the activities of the 4th year and the DCC Counterpart were busy for the activities.

Discussions:

- **Implementation Plan for the 4th Year**

At first, Mr. Hara presented framework and outline of the Project, including Overall Goal of the Project, Project Purpose and five Outputs of the Project. Afterwards he reminded the members of St/C the ideas of Technical Cooperation of Project of JICA. He emphasized required initiative of St/C as well as importance of the 4th year. He also gave brief explanation on ward based approaches (WBAs).

- **Over view of PDM**

At this point Mr. Hara requested the St/C members to discuss on Objectively Verifiable Indicators (OVIs) of as the Mid-term Evaluation Mission pointed out necessity of further discussion and clarification last year. He firstly explained elements and structure of PDM, then proposal of the modification for indicators of the Project Purpose and the Overall Goal. For other proposal of modifications for the five Outputs, he requested to the members to read the proposals after the meeting and to send comments to the secretary of the St/C, SE of WMD in writing.

- **Staffing to Waste Management Department (WMD)**

Mr. Maksud Rahman Chowdhury, CWMO, DCC, explained that two types of selection committee meetings, one for Class II and higher class posts and another for Class III or lower posts would be held soon, that the file for the selection committee meetings had already reached to the Honourable Mayor, that he was about to sign and determine the date of the committee meetings and that process of recruiting would start after the committee meetings.

- **Discussion:**

As Mr. Cho inquired about the class of the drivers according to the salary grade in WMD, CWMO informed that in WMD organogram drivers shall be in Class III employee category.

Then to reply a inquiry from Mr. Cho regarding ownership of the workshops, Mr. CWMO informed that existing two workshops; Workshop1 and 2 shall remain under Mechanical Divisions of the Engineering Department, and that the new workshop to be constructed under Environmental Grant Aid Program will be under WMD. At this

point Dr. Tariq mentioned that the process of establishment of WMD should be a gradual process and it needs to attain some capacity as well as time to run in full swing.

Then Mr. Cho inquired whether the personnel of the workshops to WMD or not. In reply Dr. Tariq mentioned that under the Environmental Grant Aid Program some drivers and mechanics will be trained up who will work as the trainer for new employees of the workshop. At this point Mr. Zia insisted that the employee who will be given training through Environmental Grant Aid should be considered during transfer of the employee to WMD.

Then CWMO mentioned that as JICA Expert Team is closely working with DCC and may know the capacity of different staffs, hence they may recommend some name for transferring to DCC. In reply Mr. Hara said that as a external persons, it is not good for JET to recommend particular staffs, but rather in general JET can recommend those person who have developed their capacity through technical cooperation with JICA since 2003 as JET issued a letter to the previous CEO in March 2008.

SE of WMD inquired about strategy for revenue increase for SWM. In reply Mr. Hara informed that in the Master Plan has already recommended to re-evaluate and update values of the property for holding tax and increase percentage of conservancy rate, that during next year Master Plan will be reviewed, and at that time this issue will be considered.

At the end of the of the meeting, it was found that some new members of St/C do not understand institution for Project implementation. For these members, Mr. Hara recommend for the new members to refer Record of Discussion and Minutes of Meetings concluded between JICA and relevant authority of the Government of Bangladesh in October and December 2006.

Md. Nurul Haque	Mr. Naoki Hara
Chief Executive Officer	Chief Advisor
Dhaka City Corporation	JICA Expert Team

9) Ninth Steering Committee Meeting

Ninth Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Ninth Steering Committee Meeting
Date and Time	14th December, 2009 12.00-01.30
Venue	Room number 212, DCC
Attendant	1. Md. Nurul Huq, Chief Executive Officer 2. Brg Gen Dr. MD. Showkat Ali, Chief Health Officer 3. Brg Gen Md. Abdul Qadir, Chief Engineer 4. Ms. Nasreen Akhtar Chowdhury, Deputy Secretary 5. Captain B.K Saha, Chief Waste Management Officer 6. Bellal Hossain Mia, Chief Account Officer 7. Mr. Moniruzzaman, Chief Revenue Oficer 8. A S M Shahen Reza, Chief Store and Purchase Officer 9. Syed Qudratullah,Superintending Engineer,WMD 10. Dr. Tariq Bin Yousuf, PD, LIP, DCC 11. Dewan Mohammad Shah Alam, Add. CWMO 12. Md. Mizanur Rahman, WMO, Budget (In charge) 13. Ms. Saeda Makimoto, JICA Bangladesh 14. Mr. Zaki Md. Ziaul Islam, Program Officer, JICA Bangladesh Office 15. Mr. Naoki Hara, JET 16. Mr. Takatoshi Arai, JET 17. Mr. Mostafizur Rahman, JICA Expert Team 18. Ms. Rifat Ahmad, JICA Expert Team 19. Md. Shoriful Alam Mondal, JICA Expert Team 20. Mr. Pallab Debnath, JICA Expert Team 21. Mr. Mohammad Ali, JICA Expert Team 22. Ms. Nandita Das,JICA Expert Team
Agenda	1. Progress Report 5 2. Staffing to Waste Management Department 3. Revision of Indicators in PDM of the Project 4. Others
Material	1. Draft Progress Report 5 2. Presentation Material

At the beginning Steering Committee members introduced themselves. Mr. Nurul Huq, Chief Executive Officer, DCC, requested Captain Bipan Kumar Saha, Chief Waste Management Officer (CWMO), DCC, to start the discussion as per agenda.

Agenda 1: Draft Progress Report 5

Captain B K Saha started the discussion on Draft Progress Report 5 with brief explanation about the project background, frame work and current issues to continue fulfillment of Project Purpose. To describe the Progress Report 5, he mentioned that the report show achievement of project purpose and five outputs of the project, which was measured as degree of attainment of indicators.

To inform the achievement of Project Purpose, CWMO mentioned that the indicators are already attained. He informed that around 2000-2100 tons of waste is collected and transferred to Matuail (about 1300 ton) and Amin Bazar (about 700-800 ton) landfill site, which is around 50% to 52.5% of total generated waste. He also mentioned that first two WBA wards ratio of satisfied residents were found 40% for SWM services. In a baseline survey during August, 2009 showed that more than 50% of the residents are satisfied with SWM service in 7 wards included in WBA program.

Then CWMO highlighted three urgent issues that need immediate attention;

1) Effective and efficient use of new vehicles provided with assistance of Government of Japan which needs an immediate staffing to WMD,
2) Control over the drivers (discipline and incentives) and
3) Assignment of jobs of WBA activities to the staff of Conservancy Wing to sustain and expand WBA.

Then Dr. Tariq Bin Yousuf, PD, LIP, DCC presented on the achievement of five individual outputs of the project as follows:

- Achievement of Output 1 and Community Ward Based Approach (WBA):
  - Establishment of Waste Management Department (WMD) in 2008 has officially approved combining the conservancy and engineering functions within a single department and to maintain a single chain of command and budget line.
  - Waste separation at source has started in some wards, a study to define the waste recycling trend and its implication is ongoing.
  - Strengthen and decentralize waste management services to ward level for implement the community based approach.
  - Workers manual for the cleaners describing the safety and sanitation of the working environment through proper work practices.
  - Preparation of community based SWM guideline,
  - Developing systematic and community oriented PCSP permission and monitoring system,
  - Partnership with the private sector, NGOs, corporate agencies established,

- Achievement of Output 2 :
  - Cleaners' worker manual
  - Community based SWM guideline
  - PCSP permission and monitoring system

- Achievement of Output 3 is :
  - Improvement of existing waste collection system and smooth transfer from primary to secondary container
  - Preparation for the introduction of new vehicle 35 Compactor, 45 Container Truck
  - Starting of construction works of workshop to improve in repair and maintenance of new vehicles
  - Capacity building of mechanics and drivers through training and workshop

- Achievement of Output 4:
  - Operation of Matuail Landfill is ongoing smoothly
  - Weighbridge is under operation and regular reporting is done
  - Leachate treatment has been continuing
  - Environmental monitoring of gas, surface water and ground water is done periodically as per the EMP.

- Achievement of Output 5:
  - Cost and revenue related to waste management has been defined.
  - Expenditure of SWM has been analyzed and approximate cost per ton for waste management has been calculated to be about $20.

At this point, CEO enquired regarding the progress of construction works of Amin Bazar Landfill project. Chief Engineer suggested to present time bound progress of each component to be discussed in Steering Committee Meeting so that discussion can be done in the Steering Committee meeting to overcome any difficulties, therein

To reply the queries from CEO and Chief Engineer, Dr. Tariq said that, progress of Amin Bazzar landfill project is about 55% and by June 2010 it is designed to be completed. But due to certain problem it is needed to extend for one year. He explained that lack of coordination among the contractors has made the working condition very challenging. Chief Engineer asked about the steps has yet been taken to solve the matter. Then to reply the query from the Chief Engineer, Dr. Tariq informed that this problem had already been discussed during implementation committee meeting and many letters had been issued to notify the concerned contractors who were found to be non-responsive. At this point, CEO suggested to keep the contractors under continuous pressure and Chief Engineer requested to present a time bound progress report.

Agenda 2: Stuffing of WMD

Then Mr. Naoki Hara, Chief Advisor, JET discussed the present status of staffing of WMD. Briefly mentioning the chronograph, Mr. Hara emphasized the importance of the necessity and urgency of WMD. He explained that WMD has all major functions for Integrated Solid Waste Management, street and drain cleaning, promotion of community SWM, collection and transportation, final disposal as well as planning and budget proposal for SWM. He added that improvement of SWM required one organization which allow single chain of command for every aspectof SWM.

Then Mr. Hara mentioned Central Government (Ministry Local Government, Rural Development and Co-operatives) Issued Government Order for WMD in May 2009 and then DCC endorsed the order. After that Honorable Mayor of Dhaka City committed that the staffing should have been completed by mid-November, 2009 which had not yet been done. Then referring to the delivery of 100 waste collection vehicles through Environmental Grant Aid Program that will start February 2010, Mr. Hara strongly emphasized the importance of immediate completion of

staffing of WMD in order to ensure effective and efficient use of new vehicles. He also mentioned that before the delivery of vehicles, WMD should assign the drivers and should conduct training for the drivers.

Then Mr. Hara mentioned the processes/ tasks for staffing as below:

- Staffing with Personnel of Former Conservancy Department.
- Staffing of Engineering Wing.
- Transfer of Drivers of Waste Collection Vehicles.
- Staffing with Recruitment.
- Recruitment of Additional Drivers.

At this point, CEO asked if there was any program for drivers training. In response Mr. Syed Qudratullah, SE, WMD said that few drivers had already been trained and later the remaining drivers will be trained up. Mr. Hara informed that training was carried for daily operation and maintenance. Dr. Tariq added that 30 drivers and 30 mechanics have so far been trained up and there is budget to train 100 drivers in total.

Then CEO asked whether existing drivers can drive new vehicles properly or new recruitment is necessary. In response Mr. SE told that new recruitments will be necessary. To reply a query from Chief Engineer, CWMO informed that recruitment of the drives shall be under revenue budget. Mr. Shah Alam added that heavy equipment drivers will be shifted to WMD for driving the compactors and new drivers shall replace their current location.

At this point Chief Engineer proposed to make separate committee for staffing and solve the matter immediately though steering committee as it has sufficient power to execute the process. CEO added that another subcommittee can be formed to support and assist the steering committee for staffing.

Ms. Saeda Makimoto exclaimed with sorrow that, a series of discussions took place between DCC and JICA representative, asking for an action plan with whom, how, when WMD will be established; but so far no concrete decision has been made by DCC regarding staffing. She mentioned it to be very surprising and disappointing to JICA. To this end she warned DCC regarding the excise duty of port for the grant aid vehicle if the process is not finished on time.

Agenda 3: Revision of Indicators in PDM of the Project

Then Mr. Hara mentioned the revision of indicators in PDM incorporating the comments from JICA Advisory Committee and JICA Head quarter as below.

- Control of the Divers of Waste Collection Vehicles
  - To measure achievement of the Project amount of waste transported to landfills has to be measured.
  - Due to the uncontrollable situation, Project Team proposed the waste measurement needs external conditions of cooperation of the drivers.
  - JICA Advisory Committee and HQ insisted that the Drivers should be controlled by including them in WMD.

- Conservancy Inspectors, Cleaners, Drivers and Workshop Staff
  - Project Team proposed that to measure the motivation of them.
  - JICA Advisory Committee and HQ insisted that their motivation is essential for improvement in SWM of Dhaka City.
  - They suggested showing the attainment even qualitatively if quantitative analyses are impossible.

- Further discussion with JICA Bangladesh, JICA HQ will be necessary.
- Further discussion within the Project Team will be required.
- Approval by the Steering Committee at the end of this JFY.
- Modified Indicators will be applied in Terminal Evaluation to be conducted in July or August 2010.

Md. Nurul Haque
Chief Executive Officer
Dhaka City Corporation

Mr. Naoki Hara
Chief Advisor
JICA Expert Team

10) Tenth Steering Committee Meeting

Tenth Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Tenth Steering Committee Meeting
Date and Time	15th March, 2010 15.30-16.30
Venue	Room number 212, DCC
Attendant	1. Md. Abul Kalam Azad, Chief Executive Officer 2. Brg Gen Dr. Md. Showkat Ali, Chief Health Officer 3. Brg Gen Md. Abdul Qadir, Chief Engineer 4. M. S. Zaman, Secretary, DCC 5. Captain B.K Saha, Chief Waste Management Officer 6. Mr. Moniruzzaman, Chief Revenue Officer 7. Mr. Bellal Hossain Mia, Chief Account Officer 8. A. S. M. Emdadud Dastagir, G.M. DCC 9. Mr. Syed Qudratullah, Superintendent Engineer ,WMD 10. Dr. Tariq Bin Yousuf, PD, LIP, DCC 11. Dewan Md. Shah Alam, Add. CWMO, DCC 12. Mr. Hiroyuki Miyake, JICA Advisory Committee 13. Mr. Mitsuo Yoshida, JICA Advisory Committee 14. Mr. Shigeki Furuta, JICA Bangladesh 15. Ms. Saeda Makimoto, JICA Bangladesh 16. Mr. Zaki Md. Ziaul Islam, Program Officer, JICA Bangladesh Office 17. Mr. Naoki Hara, JET 18. Mr. Akio Ishii, JET 19. Mr. Ko Takeuchi, JET 20. Ms. Rifat Ahmad, JICA Expert Team 21. Md. Shoriful Alam Mondal, JICA Expert Team 22. Mr. Pallab Debnath, JICA Expert Team 23. Mr. Hamidullah Sarkar,JICA Expert Team
Agenda	1. Progress Report 6 2. Activity Plan for Next Financial Year (April 2010-February 2011) 3. DCC's Arrangement for Collection Vehicles and Workshop to be Program 4. Others
Material	1. Draft Progress Report 6 2. Presentation Material

At the beginning Md. Abul Kalam Azad, Chief Executive Officer, requested participant of the meeting to introduce themselves. Afterward Chief Executive Officer, DCC, requested Captain Bipan Kumar Saha, Chief Waste Management Officer (CWMO), DCC, to start the discussion as per agenda.

Captain Bipan Kumar Saha explained in brief regarding the project current status. On his presentation he described on the integrated approach of the Project. He also explained four ward based approaches in concise. He mentioned combined technical cooperation and physical investment by government of Japan through JICA like Debt Cancellation Fund, Environmental Grant Aid Program.

Agenda 1: Draft Progress Report 6

Captain Bipan Kumar Saha explained Progress Report 6 in short.

On his discussion he mentioned the progress of WBA 1. At first he described necessity of the ward offices. In this financial year project constructed only one ward office instead of five person incharge could not provide with Land clearance. Also renovated two ward offices.

JET provided Safety gears in total 36 wards which include 20 in this fiscal year. Also distributed 3000 copies of Cleaner's Manual. He also mentioned the issues like full set up of Safety and Sanitation Committee and ensures the use of safety gears.

Captain Bipan Kumar Saha mentioned issues of WBA 3, he said prompt designation of Assistant CWMO (planning) is necessary, as well include WBA activity in the job of WMD staff also necessary.

He mentioned that fixed time station collection has been introduced to ward 45 and working successfully, newly designed hand trolleys have been introduced. He also said improvement in existing collection system has been introduced in Ward 84, 50, and 53.

After mentioning Ward Based Approaches, in this year he gave explanation on five project activities. He mentioned the necessity of staffing of WMD. CWMO also said that DCC can apply the PCSP registration, monitoring and evaluation form to all 90 wards. He mentioned drivers and truck cleaners of 100 collection vehicles should be assigned by early May for training and operation. He also mentioned that budgeting procedure for WMD has determined. He also presented waste management costs of DCC for six months of 2009-10 FY.

At this point he mentioned the degree of attainment of two indicators. First one is around 49-51% of wastes per day are transported to landfills and disposed properly. The other one is ratio of satisfied residents increased from 21% to 63% in Ward 36 and Ward 76 between the time of commencement and two years after WBA implementation. The ratio increased from 42% to 68% on average, in W44, W63, W69 and W75 on average.

Agenda 2: Activity plan for next FY (April 2010 to February 2011)

At this point he mentioned as below,

- The next financial year will be the last year of this technical cooperation Project.
- WMD will concentrate on setup management system of Project activities for WMD to continue Project activities even after the termination of the Project.

- New activities and expansion of WBA will be limited with existing human resources of WMD.
- Substantial inputs will be placed on vehicle operation especially those to be provided through the Environment Grant Aid Program.
- Prior to termination of the Project, review of M/P, participation to Terminal Evaluation, finalizing manuals and guidelines, compilation of Final Report and Closing Seminars are to be completed.
- Amin Bazar Landfill management is to be setup.
- Leachate treatment at landfills is to be sustainable.

Agenda 3: DCC's arrangement for collection vehicles,

- Appointment of Drivers, Cleaners and Supporting Staff
- Operation and Maintenance of the Collection vehicles and the Workshop

➢ After discussion Md. Abul Kalam Azad, CEO asked for question or remarks from the audience.

- Dr. Yoshida, Advisory committee member, pointed three issues for DCC to take care to sustain the ongoing waste management activities, those are continuity, quality, peoples understanding. He mentioned that DCC must continue the system to sustain the project activities, maintain quality work is another essential issue, for that reason Dr. Yoshida suggested to increase high officials' involvement. He also asked to increase people's awareness, do more motivational works.
- Chief Engineer Mr. Qadir pointed out on certain issues. First one is that he wanted to know the study progress clearly, mentioning the target and achievement. Second one is budget of this project. He also wanted to know relationship between JICA and JICA expert Team.
- In addition to Chief Engineer, Chief Executive Officer added that Progress of project should be quantified. CEO emphasize should be given to Motivational awareness. He wanted to know how many awareness programs was conducted, also asked to invite Mayor, and CEO for any motivational activities. He also said that DCC is working for staffing of WMD, very much concern regarding these issues.
- Response to Chief Engineer Ms. Makimoto, Representative, JICA Bangladesh, explained JICA has contracted Expert Team for working on this project, JICA can show the planed and actual man month of the expert but due to JICA policy contract can not be shown to DCC.
- Captain Bipan Kumar Saha, CWMO added, if DCC does not know the expenditure to execute in future DCC might face problem. So he requested to explain the expenses to make the budget.
- In response to CWMO, Mr. Hara said instead of showing cost we are giving emphasize to train counterpart how to estimate the cost.
- At this point Ms. Makimoto, Representative JICA Bangladesh added, we have these all cost so in case DCC need we can show.

Agenda 4: Others

At this point Dr. Tariq, Project Director of Land fill Improvement Project explained the Amin Bazar land fill project progress. He mentioned that project consist in 7 schemes. Six schemes are under Progress, one is remaining to give for contract.

- Dr. Tariq requested security for DCC Staffs who will work at Amin bazar Land fill site and infrastructural facility like floodlight, Weigh Bridge.
- In response to this point Md. Abul Kalam Azad, CEO asked CWMO to visit the site, and ensured that security will be provided if necessary.
- Apart from this Dr. Tariq added, on March 16th, 2010 first batch of 100 vehicles will be shifted from Japan and by the end of March it will be in Chittagong port. Within one month it can be available to DCC after completing the formalities at port.
- Dr. Yoshida added, last year an official order for WMD was issued but still it is not functioning, he asked CEO to take this matter more intensively.
- Reply to this point CEO said that, by mid of August all issues will be solved.

With a closing speech Md. Abul Kalam Azad, CEO, DCC asked to close the session.

Md. Abul Kalam Azad
Chief Executive Officer
Dhaka City Corporation

Mr. Naoki Hara
Chief Advisor
JICA Expert Team

21/8/10
CWMO

11) Eleventh Steering Committee Meeting

Eleventh Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Eleventh Steering Committee Meeting
Date and Time	24th August, 2010 14.30-15.30
Venue	Seminar Room, DCC
Attendant	1. Md. Abul Kalam Azad, Chief Executive Officer 2. Brg Gen Nasir Uddin, Chief Health Officer 3. Brg Gen Md. Abdul Qadir, Chief Engineer 4. Captain B.K Saha, Chief Waste Management Officer 5. Mr. Moniruzzaman, Chief Revenue Officer 6. Mr. Bellal Hossain Mia, Chief Account Officer 7. A. S. M. Emdadud Dastagir, G.M. DCC 8. Mr. Syed Qudratullah, Superintendent Engineer ,WMD 9. Dewan Md. Shah Alam, Add. CWMO, DCC 10. Mr.Abul Hasnat Md. Ashraful Alam, EE, WMD 11. Ms. Nasrin Akhter Chowdhury, Deputy ecretary, ERD 12. Mr. Quzi Monirul Islam, Deputy Chief, Ministry of Environment and Forest 13. Md. Saiful Islam, Sr. Assistant Chief. 14. Dr. M Feroz Ahmad, Member JICA Evaluation Team, Professor, BUET 15. Mr. Masahiro Oseko, Member JICA Evaluation Team, 16. Ms. Akiko Sanada, JICA HQ, 17. Mr. Hiroyuki Miyake, JICA Advisory Committee 18. Mr. Mitsuo Yoshida, JICA Advisory Committee 19. Mr. Masanobu Kashimura, JICA Bangladesh 20. M. Miwa Kaito, JICA Bangladesh 21. Ms. Saeda Makimoto, JICA Bangladesh 22. Mr. Zaki Md. Ziaul Islam, Program Officer, JICA Bangladesh Office 23. Mr. Naoki Hara, JET 24. Mr. Akio Ishii, JET 25. Ms. Rifat Ahmad, JICA Expert Team
Agenda	1. Parking space for Waste Collection Vehicles by EGAP 2. Functioning or Workshop construction by EGAP 3. Ward SWM office in Ward 75 4. Terminal Evaluation
Material	1. Hand outs

At the beginning Md. Abul Kalam Azad, Chief Executive Officer, requested participant of the meeting to introduce themselves. Afterward he requested Captain Bipan Kumar Saha, Chief Waste Management Officer (CWMO), DCC to start the discussion as per agenda.

Agenda 1: Parking space for waste collection vehicles provided by EGAP.

Captain Bipan Kumar Saha described current situation of the Environmental Grant Aid Program vehicle parking. These vehicles are currently parked in Workshop of Mechanical division 1, 2 and DCC garage in temporary basis. Taka Ten cores have been allocated in this FY for construction of new parking places.

Agenda 2: Workshop construction and functioning

Construction of the workshop by Environmental Grant Aid Program (EGAP) has been completed. DCC is working for recruitment; meanwhile for temporary arrangement DCC has a plan to take support from Mechanical-1 to function the work shop.

Agenda 3: Progress of staffing

From EGAP, DCC has received 100 vehicles. Currently DCC has many collection vehicles which need to be abolished immediately. DCC has planned to recruit additional 50 drivers and 100 cleaners for the EGAP 50 vehicles. Recruitment must do immediately; CWMO added DCC is working on it.

Agenda 4: Ward Solid Waste Management Office in Ward # 75

In total so far 13 ward offices are constructed by JICA and DCC. Ward office at Ward 75 was demolished due to leasing the space for a market. It was done in absence of CI or any concerned person. Ward 75 councilor's office will be used as ward office temporarily. CWMO also added that in future, an office will be provided in the new market building.

Agenda 5: Terminal Evaluation

At this point Dr. Yoshida explained in brief, Joint evaluation team is consist of ten members, and started the evaluation on 8th August. He introduced Mr. Oseko member of the evaluation team and asked to explain in brief regarding findings of terminal evaluation.

On his brief discussion he explained, from the view point of five evaluation criteria relevance, effectiveness, efficiency, impact and sustainability comparing plan and outcomes. The Evaluation Committee has prepared few recommendations. Based on project design matrix (PDM) Output 1 and Output 3 rated B which means almost but not fully achieved the planned outputs by the end of the project and rest three out puts were rated A as these are considered achieved satisfactory by the end of the project. As for Project purpose objectively variable Indicator 1 (OVI 1) More than 52.5% (or 2053 ton/day) of waste is transported to landfill sites and disposed properly by the end of the project was rated "A-". Considering the weighbridge data of Landfill site it seems volume of waste generation has increased significantly but from the statistics it is found that target will be achieved almost by the end of the Project.
OVI2,the ration of city residents in DCC who are satisfied with the collection services satisfied with the collection services provided by DCC (or private companies working in privatized zones) reaches 50 % by the end of the project from the current level of 36% (Master Plan Study 2005) is rated as A, as this is achieved.

Dr. Yoshida added five recommendations, (1) is completion of staff allocation of WMD, (2) utilization of 100 new vehicles procured by EGAP, (3) encourage communication in various levels, (4) expand the ward based waste collection and finally improve the landfill operation and management.

After the brief discussion Dr. M Feroz Ahmed, Professor BUET and member of JICA Evaluation Team expressed his observation. He said that the evaluation is quite objective. For bringing efficiency in solid waste management Public Private Partnership (PPP) may be necessary. He also recommended for the extension of the project, he added to give more importance on the improvement of landfill.

At the end CEO gave a brief speech, in his speech regarding staff allocation he informed that, Ministry of Local Government has given permission for recruiting 50 drivers and 100 cleaners. It will take time to recruit them. Meanwhile existing drivers can drive 50 vehicles city dwellers will be benefited. He also informed that construction of mechanical workshop is almost complete by EGAP. Ten core taka has already been sanctioned for the parking place. In terms of sustainability he requested JICA to provide more technical support. He also requested JICA to build a hospital for cleaner's medical treatment.

23.12.10

Md. Abul Kalam Azad
Chief Executive Officer
Dhaka City Corporation

Mr. Naoki Hara
Chief Advisor
JICA Expert Team

12) Twelfth Steering Committee Meeting

Twelfth Steering Committee Meeting for Project for Strengthening of Solid Waste Management in Dhaka City

Meeting Name	Twelfth Steering Committee Meeting
Date and Time	26th January, 2011 14.30-15.30
Venue	Room no 212, Seminar Room, DCC
Attendant	1. Md. Abul Kalam Azad, Chief Executive Officer 2. Brig. Gen. Md. Nasir Uddin, Chief Health Officer 3. Brig. Gen. Md. Abdul Quadir, Chief Engineer 4. Brig. Gen. Abul Hossain, In coming Chief Engineer 5. Captain B.K Saha, Chief Waste Management Officer 6. Md. Yousuf Ali Sarder, Deputy Chief Revenue Officer 7. A. S. M. Emdadud Dastagir, Deputy Secretary & G M of Transport, DCC 8. Mr. Syed Qudratullah, Superintendent Engineer ,WMD 9. Mr. Khandaker Millatul Islam, Manager of Transport , DCC 10. Ms. Khadiza Begum, Deputy Secretary, ERD 11. Md. Mahaboob Alam, AE, WMD, DCC 12. Mr. Masanobu Kashimura, JICA Bangladesh 13. Mr. Naoki Hara, JET 14. Ms. Ayumi Koyama, JET 15. Ms. Naoko Kubota, JOCV 16. Md. Mostafizur Rahman, JET 17. Md. Shoriful Alam Mondal, JET 18. Mr. Pallab Debnath, JET 19. Md. Hamidullah Sarkar, JET
Agenda	1. Project Completion Report 2. Revised Master Plan 3. Final Seminar 4. Others
Material	5. Handouts on project completion report presentation 6. Handout on Revised Master Plan

Welcoming everybody to the Twelfth Steering Committee meeting Md. Abul Kalam Azad, Chief Executive Officer, DCC requested Captain Bipan Kumar Saha, Chief Waste Management Officer (CWMO), DCC to initiate the discussions as per the agenda of meeting. Briefly describing the agenda Mr. CWMO requested Mr. Syed Qudratullah, SE, WMD, DCC to give presentation on the achievements of the project outputs and good practices.

Agenda 1: Project Completion Report

- **Achievement of the Project**

Status

- Around 2,000 ton/day of Wastes and 1700 ton/day are transported to Landfills and disposed properly.
- Waste collection capacity has substantially increased by using 44 out of 100 EGAP vehicles and 27 vehicles by Amin Bazar Landfill Project.
- Satisfied residents with Secondary Collection Service have reached up to 50% according to the survey in July 2010, while the result was 36% in 2004 from the same respondents.

Issues

- Full stuffing of WMD has not yet been achieved.
- Proper use of CNG container carriers has not been ensured
- Expanding WBA is all wards of DCC needed and existing WBA wards' activities to be sustained.
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- **Attainment of Out put**

Output 1: Capacity for management and coordination of solid waste management activities is improved.

Status

- Most of group leaders can prepare Annual Activity Plans for project Activities.
- COs of each Zone and each sections of WMD has started cost estimation for the budget proposal from 2010.
- Eight (8) good practices have compiled.
- Revised M/P has been prepared.
- Activities for Ward Based Approach are officially being implemented.

Issues

- Many important activities have been delayed due to delay in staffing of WMD.

Output 2: Capacity for participatory solid waste management program is improved.

Status

- 40 CIs/COs have been trained through PRA, TOT, WBA, etc. trainings.
- 26 CIs/COs for organizing community activities, 24 for organizing community meetings, 20 for organizing kick-off meeting, 19 for facilitation of community meetings, 11 for documentation, 10 for TOT and 10 for presentation are well experienced.
- The Community SWM guideline is prepared by JET, DCC C/P distributed and continuously revised.
- Community SWM is being implemented in the 18 wards of DCC following the guideline.
- Improved permission and monitoring system for the PCSPs have been developed.
- COs, CI, PCSPs of Cicle-1&2 are trained.
- Execution of the improved system is going on.

- More than twenty successful community initiatives are identified, such as, closure of illegal open dumping points, reduction of dustbins, withdrawal of containers, improving cleanliness by the public awareness raising, introducing primary, collection in narrow streets, uncovered areas including slums , introduction of fixed-time station collection etc.

Issues

- Potential COs/CIs should take initiatives to expand community SWM under the support of WMD HQ.
- Guideline has to be revised continuously.
- Still many CIs/COs do not have clear concept on the principles and process of Community SWM
- Monthly monitoring reports are not regularly submitted by the PCSPs

Output 3: Capacity for solid waste collection and transportation is improved.

Status

- Now 19 wards are under new collection system by the introduction of 30 compactors for 30 areas of these wards.
- Out of 46 CI's of WBA 2 target wards all of the CI can recognize the safety and sanitation for the cleaners.
- Almost all the cleaners of the 46 wards are aware of safety and sanitation.

Issues:

- Expansion of the new collection system
- Continuation of the safety gear distribution and ensuring the use
- Coordination of different types of secondary collection methods
- Recruitment of the vacant posts of WMD workshop.

Output 4: Capacity for operation and management of final disposal is improved.

Status

- Temporary Landfill Management Unit (LMU) has been established in 2009, and performing operation well.
- LMU has developed a systematic reporting system.
- Leachate treatment is ongoing with 6-8 hours/day aeration and re-circulation. Intermediate Leachate Treatment Facility has been constructed as a pilot project to introduce cost efficient Leachate treatment.
- LMU has been submitting operation data of weighbridge to headquarter of WMD HQ.

Issues

- Permanent set up of LMU is needed.
- Immediate formation of LMU for Amin Bazar Landfill Site and staff allocation is needed.
- Adequate aeration for leachate treatment need to be done at Matuail.
- Drain out of rain water and leachate from the Matuail Extension.
- Regularization of daily soil covering by changing shifting hours for waste dumping

- Starting of environmental monitoring by specialized laboratory following EMP
- Continuous Coordination between Mechanical Department, Transport Department and LMU to be strengthened.

Output 5: Capacity for financial management on solid waste management is improved.

Status

- SWM cost and revenue data have been collected monthly since FY2006/07, input regularly, and reported monthly and annually.
- According to the budget committee decision, a WMD budget preparation meeting was held and this was the first bottom-up budget preparation work by WMD itself. Further improvement is required year by next year.
- In cooperation with community group, execution of the community SWM budget has started.

Issues

- The SWM cost efficiency is presently under study.
- More precise cost analysis is required to attain the objective.
- Sometimes difficulties to collect the data from the related departments that affect the timely preparation.

- **Good Practices of the Project**

Eight Good Practices of Clean Dhaka Project have been identified by the project team as follows:

1. Development of SWM at the Ward-level as Ward Based Approaches (WBA)
2. Awareness Raising of the Citizens and other Stakeholders by PR Activities
3. Organizing CUWG and supports for their activities linked with improvement of secondary collection by DCC
4. Develop guidelines and permission procedure for PCSPs
5. Introduction of fixed time station collection system with compactor
6. Improvement in operation and maintenance of final disposal
7. Analysis Of Actual SWM Cost Structure
8. Establishment of a Secretariat of members of the six (6) city corporations to coordinate and implement SWM programs together

➢ **Discussion:**

- At the beginning of discussion CEO inquired about the subject matter for the expansion of new collection system. In reply Mr. Naoki Hara, Chief Advisor, JET explained that target for the "Project for Strengthening of Solid Waste Management in Dhaka City" has almost been achieved by 2010 but the Master Plan is until the 2015. Continuous capacity enhancement by DCC is necessary to increase the covered waste to meet up the updated demand of services. Though the new collection

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system can contribute to increase the collection and transport capacity main objective of the new collection system is to eliminate dustbins or container where waste are deposited for collection and transport, a long time and resident near there are suffering deteriorated environment. To this end Mr. CWMO added that by the introduction of "Mini Transfer Station", environmental suffering created by the road side containers has been reduced considerably and hence it should be increased in future.

- Then addressing to the achievements presented for Landfill Group, Mr. CWMO mentioned that from 2008 DCC has been allocating the budget for landfill operation and maintenance Mr. Mahbub Alam, Assistant Engineer, WMD informed that PCR for Matuail Sanitary Landfill Project was prepared, submitted Implementation Monitoring and Evaluation Division (IMED) representatives already visited the landfill site.
- There might be a confusion regarding the Amin Bazar Landfill Project, Matuail Landfill Project and Clean Dhaka Project. CWMO explained the issues and made everybody clear about the difference between Clean Dhaka Project and landfill improvement projects.
- Then SE (WMD) emphasized that although construction of the Matuail Sanitary Landfill and the expansion had been completed in 2008, most important task is the operation and management of landfill sites in a sustainable way.
- CEO asked the status of leachate treatment facility for Amin Bazar Landfill site. Mr. CWMO informed that construction work at Amin Bazar Landfill will be completed by June 2011 and leachate treatment facility is under construction. Beside that he also informed that dumping operation at Amin Bazar landfill site started earlier after construction of embankment in 2007.

- **Recommendations**

To Dhaka City Corporation:

- Activities of Ward Based Approach: Construction /renovation of ward offices in all wards, develop & strengthening of monitoring system by CO, CIs, regular reporting to WMD HQ, ensure sustainable functioning of Safety and Sanitation Committee, proper guidance and supervision for ensuring safe working environment for cleaner, continuation and expansion of WBA in all community units of existing WBA wards, careful selection of new target wards for expansion, coordination with Transport Department and Engineering Department and regular WBA Team and WBA Core Group Meeting.
- Development of Waste Management Department: Prompt staffing to WMD and further organizational development in line with the proposal in the Clean Dhaka Master Plan and decentralization of collection and transport to zones.
- Continuous Capacity Development of WMD Staff: Training of WMD staffs with on-the-job training and off-the-job training.
- Annual Activity Plans and Budget Proposal: Continuous preparation, implementation, monitoring and feedback of Annual Activity Plans and proper budgeting and expenditure monitoring.

- Continuous Public Awareness Raising Activities: Continue good relations with mass media, community participation and regular social work and campaigns and raising environmental awareness.
- Formulation of Clean Dhaka Master Plan II: Start formulating the second master plan in 2013.
- Support to Primary Collection Service Providers: Objective monitoring, control and support of PCSPs.
- Improvement in Vehicle Maintenance: Make WMD Workshop functional and train assigned staff of WMD workshop.
- Development of New Landfill: Site selection according to relevant laws/regulations in consultation with RAJUK and considering expansion of lifespan of existing landfill sites.
- Operation of Sanitary Landfill: Immediate setup of an LMU for Amini Bazar Landfill is argent, and permanent staffing to LMU is required.
- Enhance Cost Analysis: Continuation of cost analysis is necessary for efficient SWM.

To Government:

- Decentralize Operational Matters to City Corporations and Municipality.
- Enhancement of Regulatory Capacity with support of DCC.
- Proper categorization of different types of waste, clarification of management of categorized waste, setting up to proper charging system.
- Enforcement of the laws/regulations.
- Continuous SWM Networking among City Corporations with DCC's support.

To NGOs:

- Participation in Awareness Raising Activities.

To JICA

- Extension of the Project up to 2015.
- Dispatch of a Volunteer to WMD Workshop.

To Donors

- Assistance for landfill development/ set-up.
- Assistance for waste collection vehicles.
- Assistance for drain cleaning equipments vehicles.
- Assistance for cleaners' hospital.
- Assistance for capacity building.
- Assistance for cleaners' living condition and education.

➢ **Discussion**

- Emphasizing the importance of expansion of WBA to all wards, CWMO explained current situation by mentioning the space constraint for the ward office construction, shortage of core manpower,

limited coverage of WBA etc. He also mentioned that WBA is the most important tool to deliver the SWM service most efficiently to the community.

- Then to reply a query from CEO, Mr, Hara informed that in practical more than half of the cleaners wear safety gears during the working hours. But the problem is JET has distributed safety gears since almost two years ago and now the condition is very poor; hence regular replenishment of safety gears are recommended to be done regularly.
- Then highlighting the recommendation for annual activity plan and budget proposal, CWMO informed that DCC is gradually taking over the responsibilities of SWM activities through utilizing the DCC budget and continuing the Project activities independently.
- Regarding the public awareness CWMO insisted to extend its coverage and bring all wards under campaigning activities.
- Regarding support to the PCSPs, CWMO informed that PCSPs are sometimes politically backed up and hence sometimes hindrance occurs. However DCC is trying to cope with the situation and developed a good monitoring system.
- Regarding the WMD workshop, CWMO thanked CE for kind assistance for allocating some staffs to the workshop and to let start the operation. He also mentioned that without full staffing of WMD full functioning of workshop may not be possible.
- To reply a query from CEO regarding development of new landfill site SE (WMD) informed that investigation of tentative locations of landfill site is ongoing. To this end CWMO informed that for northern landfill site, location in Gazipur is under consideration with a view of unifying land filing for the neighboring municipalities and for the southern landfill Rupgonj is under consideration. Beside the search for future landfill sites, CWMO emphasized the importance of waste reduction strategies.
- Regarding dispatching volunteer for the WMD workshop from Japan, CWMO informed that the request letter has already been sent. Then as CEO inquired about the responsible department for vehicle washing, CWMO informed that Transport Department is in charge of vehicle washing. Then CEO strongly asked the Manager Transport to ensure vehicle washing. Then pointing at the illegal dumping of waste in Dhaka University area by DCC driver, CEO strongly inquired about the particulars of the driver. In reply Manager of Transport informed that investigation is under process and assured to report to Mr. CEO by following day.

Lessons Learned

- Effective Implementation of technical cooperation project with parallel physical supports.
- Learning by practical works with provision of facilities, equipment and materials.
- Providing opportunity of presentation to encourage counterpart participation at Initial Stage.
- Raising prides and motivation of the counterpart staff.
- Difficulty of project implementation with organizational assumptions.
- Networking for sharing experiences among City corporations / municipalities.

2. Revised Master Plan

Using the printed summary outline of the revised M/P Mr. Hara briefly described the topic/ issues covered by the revised M/P. He highlighted three particular additions in revised M/P; recycling and legal aspect.

➢ **Discussion**

- New Chief Engineer, DCC highlighted that recycling of waste has to be encouraged with a view to reduce waste volume and thus sustain dumping capacity at the landfill sites. To this end CEO mentioned that improved system of SWM, like waste to energy approach, electricity generation, waste reduction etc should be incorporated in the revised M/P by JET. Then SE (WMD) mentioned that all these approaches have already been suggested in the revised M/P.
- Then as CEO proposed to incorporate the cost in the revised M/P, Mr. Hara assured to follow his suggestions in the final version of revised M/P.
- Then CEO asked about the proposals on formulation of rules and regulation of SWM and Mr. Hara informed its inclusion in the revised M/P. To this end as CWMO mentioned that DOE is preparing the SWM guidelines and rules, CEO strongly insisted that DCC should prepare their own rules and regulation as SWM is sole responsibility of DCC.
- Then as CEO requested further support for new vehicles from JICA, Mr. Masanobu Kashimura, JICA Bangladesh Office informed that at first DCC must has to ensure the use of unused vehicles. Then CWMO inquired whether JICA will be allowing using unutilized 18crore taka from EGAP if 100 vehicles are properly used and Mr. Kashimura said there are many other unresolved issues with DCC before committing for new support.
- Then Mr. Hara mentioned about the general practice of any aid that receiving country has to be ready before the aid is available at that country.

3. Final Seminar

- CWMO informed steering committee members about the upcoming final seminar to be held on 13 February, 2011 at Dhaka Rigency Hotel. He also confirmed the participation of CEO and Honorable Mayor in the final seminar.

Finally thanking everybody present in the meeting, CEO declared the end of the meeting.

Md. Abul Kalam Azad
Chief Executive Officer
Dhaka City Corporation

Naoki Hara
Chief Advisor
JICA Expert Team