Annex I

Draft Project Design Matrix (PDM)

【Project Title】The Project for Strengthening of Solid Waste Management in Dhaka City of Bangladesh

【Target Groups】❶Waste Management Department* ❷Concerned Department ❸City residents *Its approval process is in progress by upgrading Conservancy Department and Waste Management Division.

【Date】October 19 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) 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%	1 Reports of WMD Project Annual Reports Development Study Reports 2 Attitude Survey/Opinion Survey Report to be conducted by DCC	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 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 practices and good 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 Project	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	

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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 Dispatch of experts	1 Frequent transfer of trained counterpart personnel does not occur
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	
1-5 Promote public relations activities such as publication of newsletters and establishment of the website	(4) Optimization of Secondary Collection	
1-6 Disseminate DCC's SWM activities to other cities through Urban City Network	(5) Landfill Management	3 Japan Debt Cancellation Fund for Matuail landfill expansion is disbursed by the Government of Bangladesh without any delay
1-7 Review and modify Clean Dhaka Mater Plan	(6) Waste Collection Vehicle and Equipment Maintenance Management	
2-1 Review and analyze the previous interventions	(7) Financial management	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	2 Provision of equipment	
2-3 Develop strategies for strengthening of community SWM in the previously and newly selected wards	3 Training of counterparts	
2-4 Develop strategies for supporting program for primary collection service providers	4 Dispatch of study team when necessary	
2-5 Develop strategies for public participation and awareness raising of SWM activities	5 Allocation of operational costs for the Project	
2-6 Make an annual Action Plan	Bangladesh Side 1 Assignment of counterpart personnel	
2-7 Conduct training on relevant community-based SWM issues for WMD counterpart personnel	2 Provision of land, building, and other necessary facilities	
2-8 Conduct attitude survey among local people in selected wards	3 Allocation of operational costs for the Project	
2-9 Implement and monitor participatory SWM activities		
2-10 Assess the participatory SWM activities		
3-1 Make an annual Action Plan		
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		
3-6 Establish route optimization practices		
3-7 Conduct detailed analysis of equipment maintenance and repair management		

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
3 General election does not adversely affect the commencement of the Project

	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		

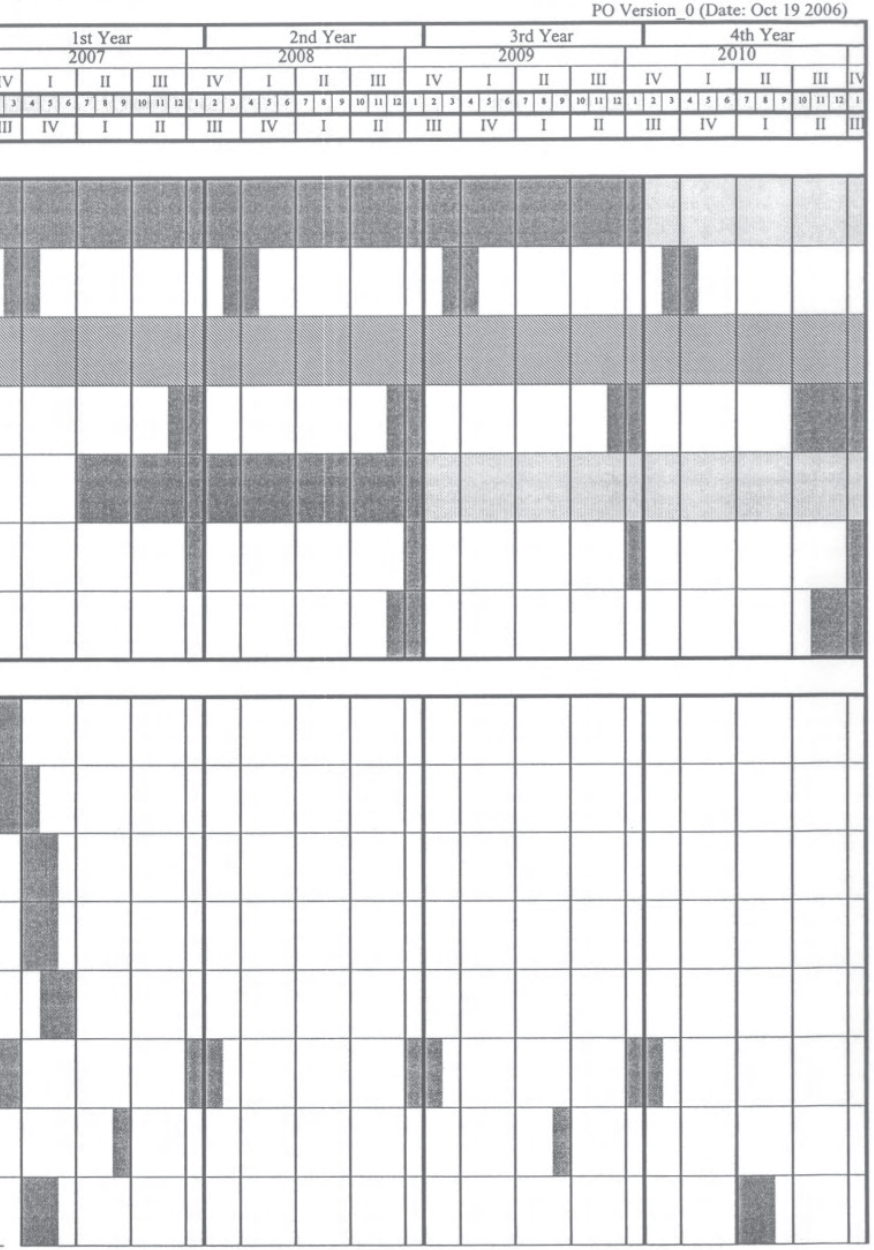
【Abbreviation】DCC (Dhaka City Corporation), MOEF (Ministry of Environment and Forest), SWM (Solid Waste Management), WMD (Waste Management Department)

Annex II

Draft Plan of Operation (PO)

PO Version_0 (Date: Oct 19 2006)

Output No.	Activities	Person/Organization in Charge	Collaborators
1	**Project management and coordination are in place**		
1-1	Hold monthly meetings among counterpart personnel of WMD, Japanese experts and concerned personnel in other departments	Waste Management Department, Japanese experts	Other departments
1-2	Compile annual Action Plans from Output 2, 3, 4 and 5	Waste Management Department, Japanese experts	Other departments
1-3	Advocate necessary actions related to SWM issues	Waste Management Department, Japanese experts	Stakeholders of SWM
1-4	Compile good practices and lessons learned from the project activities	Waste Management Department, Japanese experts	Other departments
1-5	Promote public relations activities such as publication of newsletters and establishment of the website	Waste Management Department	Other departments
1-6	Disseminate DCC's SWM activities to other cities through Urban City Network	Waste Management Department	Other departments, members of Urban City Network
1-7	Review and modify Clean Dhaka Mater Plan	Waste Management Department, Japanese experts	Other departments
2	**Participatory solid waste management program is promoted**		
2-1	Review and analyze the previous interventions	Waste Management Department, Japanese expert	Ward SWM Committee, JOCV
2-2	Review and finalize the existing draft Ward SWM Guideline	Waste Management Department, Japanese expert	Ward SWM Committee, JOCV
2-3	Develop strategies for strengthening of community SWM in the previously and newly selected wards	Waste Management Department, Japanese expert	Ward SWM Committee, JOCV
2-4	Develop strategies for supporting program for primary collection service providers	Waste Management Department, Japanese expert	Ward SWM Committee, JOCV, NGO/CBO (service providers)
2-5	Develop strategies for public participation and awareness raising of SWM activities	Waste Management Department, Japanese expert	Ward SWM Committee, JOCV
2-6	Make an annual Action Plan	Waste Management Department, Japanese expert	Ward SWM Committee, JOCV
2-7	Conduct training on relevant community-based SWM issues for WMD counterpart personnel	Waste Management Department, Japanese expert	Resource person
2-8	Conduct attitude survey among local people in selected wards	Waste Management Department, Japanese expert	Ward SWM Committee, JOCV



Annex II

Draft Plan of Operation (PO)

2-9	Implement and monitor participatory SWM activities	Waste Management Department, Japanese expert	Ward SWM Committee, JOCV	
2-10	Assess the participatory SWM activities	Waste Management Department, Japanese expert	Ward SWM Committee, JOCV	
3	**Capacity for solid waste collection and transportation is improved**			
3-1	Make an annual Action Plan	Waste Management Department, Japanese expert	Other departments	
3-2	Operate weighbridge at Matuail and Amin Bazar sites	Waste Management Department	Other departments, Local consultants	Matuail, Amin
3-3	Identify every secondary collection route and its efficiency by route monitoring and employing weighbridge data	Waste Management Department, Japanese expert	Other departments	
3-4	Identify problematic and/or inefficient routes	Waste Management Department, Japanese expert	Other departments	
3-5	Optimize and reorganize routes to embrace a problematic and/or inefficient route	Waste Management Department, Japanese expert	Other departments	
3-6	Establish route optimization practices (to be repeated periodically by DCC according to the speed of city expansion)	Waste Management Department, Japanese expert	Other departments	
3-7	Conduct detailed analysis of equipment maintenance and repair management	Waste Management Department, Japanese expert	Other departments	
3-8	Set up the indicators for equipment maintenance and repair management	Waste Management Department, Japanese expert	Other departments	
3-9	Take necessary measures for improvement	Waste Management Department, Japanese expert	Other departments	
4	**Final disposal sites are operated and managed appropriately**			
4-1	Make an annual Action Plan	Waste Management Department, Japanese expert	Other departments	
4-2	Assess the changes/improvements of disposal sites by regulatory bodies	Waste Management Department, Japanese expert	Regulatory bodies	
4-3	Conduct on-the-job training on operation and maintenance of existing Matuail Landfill for WMD counterpart personnel	Waste Management Department, Japanese expert	Other departments	
4-4	Conduct environmental monitoring for operation and maintenance in existing Matuail Landfill	Waste Management Department, Japanese expert	Other departments	
4-5	Formulate and submit Environmental Management Plan for Matuail landfill expansion to MOEF (by DCC)	Waste Management Department	Local consultants, MOEF, other departments	
4-6	Construct Matuail landfill expansion (by DCC)	Waste Management Department	Local consultants, other departments	

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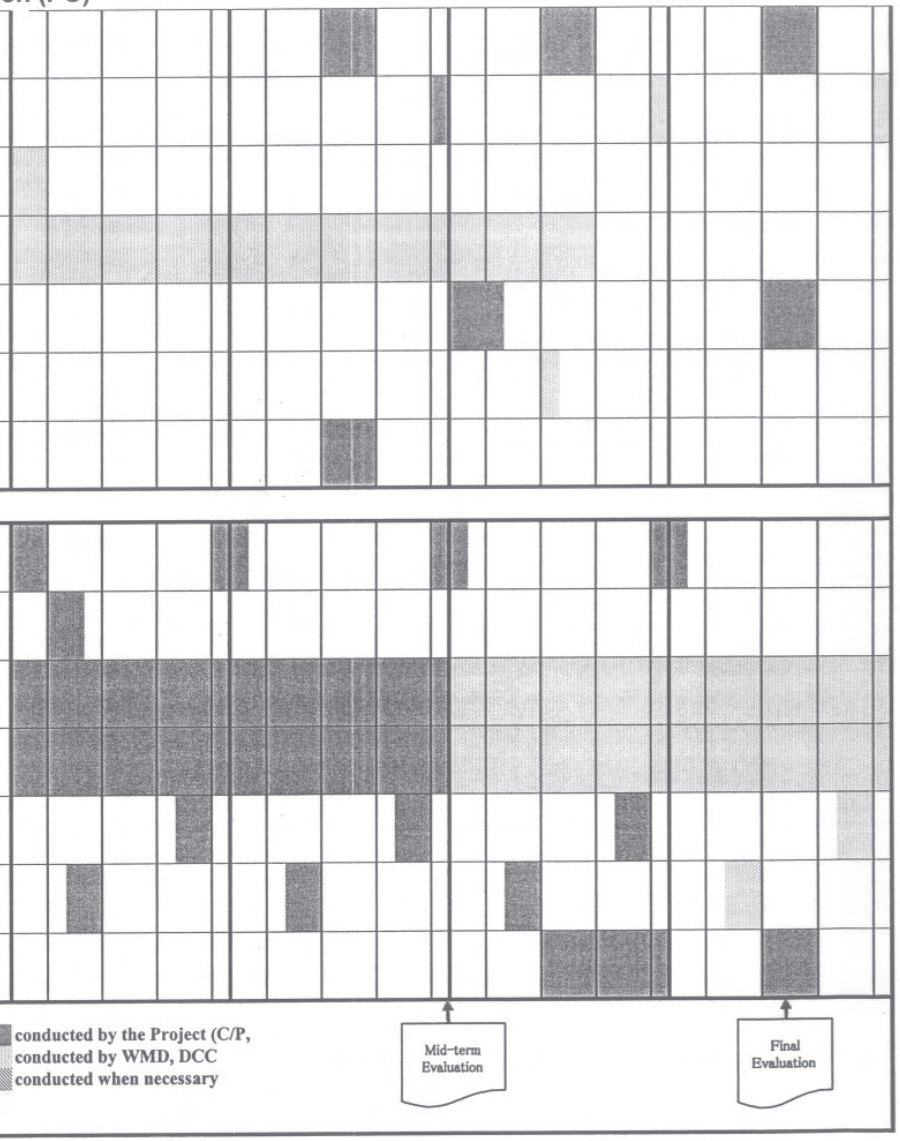
Draft Plan of Operation (PO)

4-7	Conduct on-the-job training on operation and maintenance of Matuail landfill expansion for WMD counterpart personnel	Waste Management Department, Japanese expert	Other departments	
4-8	Conduct environmental monitoring for operation and maintenance in existing Matuail landfill	Waste Management Department, Japanese expert	Other departments	
4-9	Formulate and submit Environmental Impact Assessment for Amin Bazar New Landfill to MOEF (by DCC)	Waste Management Department	Local consultants, MOEF, other departments	
4-10	Secure necessary budget and construct Amin Bazar new landfill (by the Bangladesh side)	Waste Management Department	Other departments, MOF, LGRD	
4-11	Conduct on-the-job training on operation and maintenance of Amin Bazar new Landfill for WMD counterpart personnel	Waste Management Department, Japanese expert	Other departments	
4-12	Conduct environmental monitoring for operation and maintenance in Amin Bazar new landfill	Waste Management Department, Japanese expert	Other departments	
4-13	Examine operation and maintenance modality including direct operation by DCC or contract/concession to private entity	Waste Management Department, Japanese expert	Other departments	
5	**Accounting system necessary for solid waste management is improved**			
5-1	Make an annual Action Plan	Waste Management Department, Japanese expert	Other departments	
5-2	Conduct orientation program of accounting system for concerned staff members	Waste Management Department, Japanese expert	Other departments	
5-3	Collect actual cost data and actual revenue data periodically in every month	Waste Management Department, Japanese expert	Other departments	
5-4	Input data and output annual budget and monthly actual cost	Waste Management Department, Japanese expert		
5-5	Develop a financial report	Waste Management Department, Japanese expert		
5-6	Make a financial plan	Waste Management Department, Japanese expert		
5-7	Develop a strategy for increasing revenue for SWM	Waste Management Department, Japanese expert	Other departments	



【Abbreviation】DCC (Dhaka City Corporation), MOEF (Ministry of Environment and Forest), MOF (Ministry of Finance), JOCV(Japan Overseas Cooperative Volunteer), LGRD(Ministry of Local Government, Rural Development and Co-operatives), SWM (Solid Waste Management), WMD (Waste Management Department)

【Legend】 conducted by the Project (C/P, conducted by WMD, DCC conducted when necessary

Annex III Tentative List of Bangladesh Counterpart Personnel

1. Counterpart personnel

Area	Name	Number	Required qualification
Management and Coordination	Leader	1	
	Deputy Leader	1	Full-time
	Officer	3	Full-time
	Other program members		
Community Management/ Communication	Leader	1	
	Deputy Leader	1	Full-time
	Officer	3	Full-time
	Conservancy Inspectors (CI)	8	(Including CIs of the 5 new activity areas)
Collection and Transportation	Leader (Engineer)	1	Full-time
	Deputy Leader (Engineer)	2	Full-time
	Engineer	3	Full-time (including Computer Operator)
	Officer	6	
	Engineer(Town Planner)	2	
	Engineer(Mechanical 1)	1	
	Engineer(Mechanical 2)	1	
	Engineer(Store)	1	
Landfill Management	Landfill Management Unit (LMU)		Full-time
Accounting Management	Leader(Accounts Officer)	1	
	Deputy Leader	1	
	Officer	6	

2. Administrative personnel
   - Clerk administrator
   - Computer operators
   - Office clerks
   - Other supporting staff necessary for the project implementation (e.g. drivers)

Annex IV Steering Committee

1. Functions

The Steering Committee (hereinafter S/C) shall be established for the effective and successful implementation of technical cooperation for the Project. The S/C shall meet at least once every six (6) months or whenever necessity arises. The main functions of S/C shall be as follows;

(1) To examine and approve the Annual Plan of Operations to be formulated by the Project based on the tentative schedule of implementation within the framework of the Record of Discussions;
(2) To review the overall progress and achievement of the Project and activities carried out under the above-mentioned Annual Plan of Operations in particular;
(3) To review and exchange views on major issues arising from or in connection with the Project and recommended corrective measures; and
(4) To facilitate coordination with other relevant authorities.

2. Chairperson and members

(1) Chairperson
- Chief Executive Officer, DCC

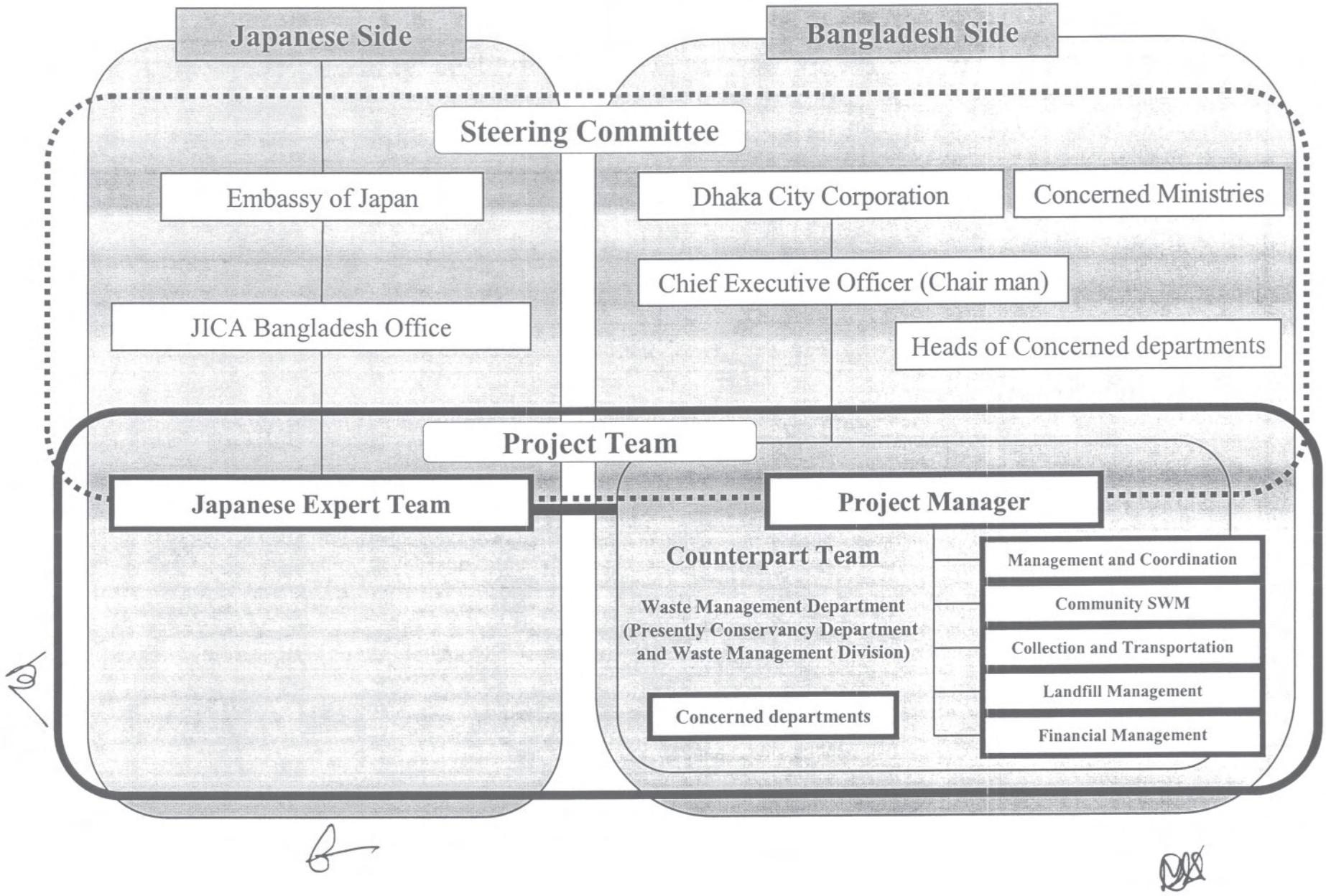
(2) Committee Members

<Bangladesh side>
- Project Manager
- Secretary of DCC
- Chief Conservancy Officer
- Chief Engineer
- Chief Health Officer
- Chief Accountant
- Chief of Store
- Representative of Local Government Division, Ministry of LGRD & Co-operatives
- Representative of Economic Relations Division, Ministry of Finance
- Representative of Department of Environment and Forestry
- Other personnel concerned to be decided and/or dispatched by the Bangladesh side, if necessary

<Japanese side>
- Chief advisor to be dispatched by JICA
- Representatives of JICA Bangladesh Office
- Representatives of Embassy of Japan
- Other personnel concerned to be decided and/or dispatched by JICA, if necessary

Annex V

Chart of the Project Implementation



Annex VI Tentative List of Machinery and Equipment

Machinery and equipment, if necessary, will be provided for the implementation of the Project. The detailed contents, specification and quantity of machinery and equipment will be subject to budget approval.

The necessary machinery and equipment to achieve the project purpose, such as computer and software for waste collection routes optimization, office equipment, will be provided by the Japanese side. The list of machinery and equipment will be determined before signing of R/D.