

Summary of Terminal Evaluation

I Outline of the Project	
Country: Bangladesh	Project title: The Project for Strengthening of Solid Waste Management in Dhaka City (Extension)
Issue/Sector: Environment Management (Solid Waste Management)	Cooperation scheme: Technical Cooperation Project
Division in charge: JICA Bangladesh Office	Total cost (estimated at completion of the Project): 590 million JPY (Include main body)
Period of Cooperation	R/D: From February, 2007 to February, 2011
	Extension: From February, 2011 to February, 2013
	Partner Country's Implementing Organization: Dhaka City Corporation (DCC), Waste Management Department (WMD) Supporting Organization in Japan: Yachiyo Engineering Co., Ltd. Related Cooperation Project: Development Study (Nov. 2003 to Mar. 2006), Environmental Grant Aid Project, Japan Debt Cancellation Fund, Japan Overseas Cooperation Volunteers, Grass-roots Grant Aid
<p>1-1 Background of the Project</p> <p>Japan International Cooperation Agency (JICA) started technical cooperation on solid waste management (SWM) with Dhaka City Corporation (DCC) in 2000. During the period from November 2003 to March 2006, a development study was implemented. Clean Dhaka Master Plan, the main output of the study was the first master plan on SWM in Bangladesh that covers all aspects of SWM, including public awareness raising, primary collection, secondary collection, transportation and final disposal as well as administration and financial management. For the implementation of Clean Dhaka Master Plan, a technical cooperation project consisting of the dispatch of experts started in February 2007 and completed in February 2011 implemented by DCC and JICA Expert Team (JET). Six months prior to the termination of the project, a terminal evaluation was conducted and the 2-year extension of the project was recommended due to the insufficient sustainability of the project. According to the recommendation, the extension phase of the project has started in February 2011 to be terminated in February 2013. Hereinafter, the project term from February 2007 to February 2011 is named as "main phase" while that from February 2011 to February 2013 is named as "extension phase."</p> <p>In parallel with the technical cooperation activities, the Government of Japan supported other SWM activities in DCC. Improvement and expansion of Matuail landfill site and the construction of Amin Bazar landfill site were implemented using the Japan Debt Cancellation Fund (JDCF). JOCVs have been dispatched for environmental education and waste management. For improving transportation of waste material, 100 collection vehicles and the construction of a workshop for them has been provided by Environmental Grant Aid Program (EGAP).</p>	
<p>1-2 Project Overview</p> <p>(1) Overall Goal The solid waste management services of Dhaka City Corporation are sustained and the sanitary environment of the city is improved.</p> <p>(2) Project Purpose The solid waste management services of Dhaka City Corporation are improved.</p> <p>(3) Outputs 1) Capacity for management and coordination of WMD is improved. 2) Capacity for promoting WBA of WMD is improved.</p> <p>(4) Inputs Japanese side: Dispatch of Experts: 6 persons (23.2 man/month), Training in Japan: 3 persons, Training in the third countries: 3 persons, Provision of equipment: non, Local cost expenditure: 19,982 thousand yen Bangladeshi side: Counterpart personnel: total about 12 persons, Provision of land and facilities: office space, Local cost expenditure</p>	
II Evaluation Team	
Members of Evaluation	1) Leader: Mr. Kei TOYAMA, Senior Representative, JICA Bangladesh Office, JICA 2) Solid Waste Management: Dr. Mitsuo YOSHIDA, Senior Advisor, JICA

Team	3) Environment Cooperation: Mr. Takuya MANABE, Program Officer, Environmental Management Division 2, Environmental Management Group, Global Environmental Department, JICA 4) Cooperation Planning: Mr. Tsuyoshi KANO, Representative, JICA Bangladesh Office, JICA 5) Evaluation Analysis: Mr. Masahiro OSEKO, Consultant, Nevka Co., Ltd.	
Period of Evaluation	From November 17, 2012 to December 1, 2012	Type of Evaluation: Terminal Evaluation
III Results of Evaluation		
3-1 Achievement		
(1) Achievement of Outputs		
1) Output 1: Capacity for management and coordination of WMD is improved.		
Output 1 has been mostly achieved.		
<ul style="list-style-type: none"> • Both of north and south WMDs have respectively formulated “Annual Activity Plan on Solid Waste Management 2012-2013” but with the assistance of JET who prepared the draft. • While the solid waste management budget was properly prepared by WMD, the bottom-up budgeting system introduced in 2011 was not applied in the budgeting for 2012. The bottom-up budgeting system was introduced by the project for realizing a more transparent and accountable budgeting than a top-down line-item-based budgeting. • Matuail landfill is well managed and operated as a whole despite the fact that the most of LMU (landfill management unit) staffs are deputed or temporary employed. In Amin Bazar landfill site, while LMU has been organized, staffing is quite insufficient and landfill operation is carried out without a site manager and any specific operation plan. The landfill environmental monitoring which used to be conducted in Matuail landfill has not been implemented since the division of DCC in both of Matuail and Amin Bazar landfill sites. • The project held a series of seminars to revise the WMD Directives, and in these seminars, monitoring and evaluation of waste management activities were carried out with outside specialists. But this is a time-bound seminar but not a permanent monitoring body. • A large proportion (about 80 to 90%) of waste collection vehicles keep bypassing weighbridges intentionally due to undesirable relationships between WMD and the drivers. The volume of the waste is estimated by the project by the alternative means conducting occasional surveys. 		
2) Output 2: Capacity for promoting WBA of WMD is improved.		
Output 2 has been mostly achieved.		
<ul style="list-style-type: none"> • Newly constructed or renovated 15 ward offices are being used by COs (conservancy officers) and CIs (conservancy inspectors), cleaners and local residents for meetings, office works, equipment maintenance, resting and etc. • COs and CIs involved in WBA activities have been significantly empowered and expanded their vocational functions. As a result of this, they have gained acknowledgement from other staff of DCCs and local residents in their wards. • WBA reporting system was introduced and the accidents and risk information were supposed to be reported through this system. However, the implementation of this system has stagnated due to the opposition from cleaners’ union. • Community Activity Plans were formulated by Community Unit Working Groups (CUWGs) composed of CIs, COs, PCSPs and local residents in 5 wards and waste management activities involving them have been implemented in these areas. • The improvement of conventional collection system were observed in 7 wards. Improvement of conventional collection system includes narrow street primary collections harmonizing hand trolleys works and container collection, collection of street-swept waste using newly introduced rickshaw vans, and others. 		
(2) Achievement of the Project Purpose		
The Project Purpose is expected to be achieved.		
<ul style="list-style-type: none"> • The indicator of the Project Purpose (2,540 ton/day or 58 % of total amount of waste is disposed) is expected to be achieved by the target year of 2013. 		

- The interviews with local residents and the observation of a kick-off meeting of community activities have found that the satisfaction of local people at waste management has increased due to the realization of clean towns and streets and decrease of odor.
- The volume of waste collected has been increasing despite the number of vehicles has decreased due to the scrapping of old and out-of-service vehicles. This indicates a development of WMD's capacity in waste collection.
- WMD has made some steps forward for recruiting its staff. DCC has employed 50 drivers and 100 helpers for 100 collection vehicles provided by EGAP before the division of DCC. After the division of DCC, 69 staffs have been recruited and will be assigned to their posts in November 2012.
- DCCs have started some new projects for waste management with their own initiatives such as the extension of landfill sites, construction of secondary transfer stations, a plan of a regional landfill site and a concept plan of a waste-to-energy system. These movements could be seen as signs of the improvement of capacity and initiative of WMDs for upgrading their solid waste management services for citizens.

(3) Achievement of the Overall Goal

The indicator of the Overall Goal is expected to be achieved by the target year of 2015 as long as the other conditions such as primary collection of waste, maintenance of vehicles and operation of landfill sites do not significantly change. The trend of regression analysis also supports this estimation.

3-2 Summary of Evaluation Results

(1) Relevance: Very High

The Bangladeshi national policies of the "Poverty Reduction Strategy Paper, Nov. 2005," the "Sixth Five Year Plan FY2011-2015" and the Japanese ODA policy of the "Country-Specific Plan for Bangladesh, June 2012" all of these policies emphasize alike the importance of proper waste management as an issue relating to environment protection and sanitary for health. The consistency of the project with national policies is thus high. Environmental and sanitary issues caused by the waste are still prevailing widely in Dhaka city and threatening the health and sound living environment of residents. Therefore, there is still a high demand for the improvement of the SWM services of DCCs. Regarding the approach and methodology of the project, DCCs in collaboration with JICA has been implemented a variety of cooperation schemes such as the development study, JDCF, EGAP, JOCV and technical cooperation project. This combination of different approaches realized the holistic and dynamic program approach and created a variety of positive effects on 1) capacity development at individual level of DCC officers and staffs, 2) organizational development in DCC such as the establishment of WMD, 3) SWM infrastructure development such as landfill sites and a workshop, 4) institutional development such as the formulation of WMD Directives, and 5) community empowerment through WBA activities.

(2) Effectiveness: High

The target of indicator of the Project Purpose is expected to be achieved by the target year of 2013. Besides, some new movements have been taken by the initiative of DCCs, which indicate the development of capacity of DCCs, such as the staffing of WMDs, the extension of landfill sites, the construction of transfer stations and the consideration of "waste-to-energy" and regional SWM. On the other hand, there are still some issues such as staffing of managerial level officers, construction and operation of landfill sites, and uncooperative behavior of drivers of collection vehicles.

(3) Efficiency: Very High

Most of the inputs from Japanese side such as dispatch of experts, training of counterparts in Japan and in the third countries, provision of equipment and local cost support were executed as planned. Bangladeshi counterparts highly evaluated the assignment timing, expertise and guiding capacity of Japanese experts, and were mostly satisfied with contents, timing and duration of training programs in Bangladesh. DCC has provided an office space for JET and assigned counterpart personnel. The number of assigned counterparts has been very limited due to the under-staffing issues of WMD. Because of this, some activities of the project such as the drafting of Annual Activity Plans of SWM have been implemented not by WMD staff but by the Japanese experts. However, overall, the project has made intensive efforts with the limited number of assigned counterparts under the technical guidance of JET and has achieved the outputs almost satisfactorily. Since the expected outputs have been realized with limited inputs, the efficiency of the project is evaluated as very high. Negative effects caused by the limited number of counterparts such as an

opportunity loss are taken into account in the evaluation of effectiveness and sustainability.

(4) Impact: A wide variety of impact of the project can be observed as follows;

1) Achievement of Overall Goal

As stated above in 3-1 (3), the target of indicator of the Overall Goal is expected to be achieved by the target year of 2015 as long as the other conditions (improvements of primary collection, operation of vehicles and landfill sites) do not significantly change.

2) Other Impacts

- While there are two outputs planned and indicated in the PDM, the project has extended its activities much wider. The project has been covering almost all components of waste management from waste collection at community level to landfill operation.
- According to the interviews with local residents, the satisfaction of local people at waste management has increased due to the realization of clean towns and streets and decrease of odor.
- The model of waste management improvement developed by the project has been known to neighboring cities. As a result, the necessity of regional sanitary landfill sites has been recognized among them and its conceptualization has just started.
- Five City Corporations namely Chittagong, Khulna, Rajshahi, Sylhet and Barisal are constructing sanitary landfill sites based on the design of Matuail landfill site.
- Khulna and Chittagong City Corporations have been inspired to replicate similar type of SWM activities as is done in DCCs.
- The model of waste management improvement developed by the project is planned to be introduced to other countries such as Sudan and South Sudan who will visit the project in December 2012.

(5) Sustainability: Fair

1) Political aspect:

Although there is an Environment Act 1995, there are no guidelines or strategies of solid waste management which would back up the sustainable operation of WMD. The project has developed “WMD Directives” as a guiding principle of the work frame of WMD indicating the most urgent works of waste management. WMD Directives is currently under revising process according to the division of DCC and expected to be completed and distributed by the end of the project. DCCs have not yet issued any policy papers about solid waste management and the revision of Clean Dhaka Master Plan.

2) Organizational aspect:

Staffing of WMD has seemingly made some progress but the overall situation has remained relatively serious with a significant number of vacancies in headquarters such as Additional CWMOs, Deputy CWMOs, Executive Engineers (DSCC) and zone level management officers of Assistant CWMOs, landfill sites and the workshop. The existing staff of WMD are mostly deputed and not permanently assigned to the current posts. Therefore, WMD is still vulnerable as a department. The field level officers and workers such as CIs and cleaners have been highly empowered and developed confidences and self-respects in their jobs through WBA activities. Nevertheless, rigid and stagnant personnel management does not reward to them and discourage them in a way.

3) Financial aspect:

The budget for solid waste management of DCC has constantly been increasing. But still the total amount of budget is not enough for DCCs to procure all the necessary goods and services. While one budget officer in charge had been appointed before the division of DCC, no budget officer is deployed for both DNCC and DSCC after the division. Revenue enhancement measures planned in the Clean Dhaka Master Plan have not sufficiently been carried out by DCCs and GOB. Those measures included the reassessment of property value, taxation rate revision of conservancy rate and tax collection improvement. The equipment and facilities including collection vehicles and the workshop provided by EGAP are deteriorating in use. Therefore, the fund reserve by means of depreciation is required. But no fund has been reserved for this purpose in DCCs.

4) Technical aspect:

Both DNCC and DSCC have prepared Annual Activity Plans for 2012-2013 but yet with the assistance of JET who substantially prepared the draft. Planning is one of the most basic activities of management and, therefore, it indicates a weakness in the technical sustainability of the project. Technical transfer to Matuail LMU has steadily advanced and they are highly empowered and motivated. But since most of the LMU staffs are deputed and temporally assigned and if those staffs do not stay in WMD, transferred technology

would not stay in WMD leaving together with them. Due to the incomplete construction, operation and maintenance of Amin Bazar landfill site would be a challenging issue in near future. Technical and human capacities of the workshop are insufficient for the number of collection vehicles they have.

5) Other aspect:

The project has focused on three topics particularly for improving the sustainability of the project, i.e. staffing of WMD, monitoring by outside specialists and compilation of a manual for clarifying the standards and procedures of WBS's daily operational works.

Target of indicator of the Overall Goal is expected to be achieved as stated above in 3.2.1. The targeted percentage of 66% and the volume of 3,054 ton/day were calculated based on the population in 2015 assumed in 2005. But the increase of population in actual has been further rapid in time and large in scale. Therefore, there must be more waste generated in reality. And not only 66% but 100% of waste is eventually supposed to be collected. It is therefore required DCCs to improve their capacity of services all the more.

3-3 Factors that promoted realization of effects

- (1) The assistance of the Government of Japan for DCC's waste management has formulated a so-called program approach over a decade composed of the development study, JDCF, EGAP, JOCV and the technical cooperation project. This holistic and dynamic program approach realized a variety of positive effects on the solid waste management of Dhaka City. JOCVs' contribution to the improvement of community level waste management is notable. JOCVs are taking parts in the improvement of abilities of COs, CIs, cleaners, PCSPs and local residents.
- (2) CIs and COs in WBA wards have been well trained to be planners, implementers, evaluators, coordinators, facilitators, trainers and managers playing the leading roles in the promotion of WBA activities. Without their positive commitment, the introduction of participatory approach of WBA activities had been very difficult. Capacity development of CIs and COs would be an indispensable component for disseminating the SWM model developed by the project to other urban areas such as New City Corporations.
- (3) Community participation is indispensable not only for the primary collection but also for the secondary collection because without the understanding and cooperation of communities, it is very difficult to introduce compactors which require waste collection at the fixed time at the fixed place.
- (4) The project has been trying to change the self-consciousness and to raise the social status of officers and staffs working on waste management through WBA activities. They are intangible but indispensable for realizing the improvement of waste management of Dhaka city.

3-4 Factors that impeded realization of effects

- (1) Stagnant personnel management of WMD especially on the managers' level has created stumbling blocks here and there like in the management of landfill sites, the operation of the workshop and field level activities of COs and CIs.
- (2) There was no serious impedance at the time of the division of DCC at December 2011 because DCCs had maintained their activities as one corporation despite its separation for the time being. But after the DCC has practically divided, the work of the project has been almost doubled, which has spoiled the efficiency of JET's activities.

3-5 Conclusion

Indicators of Overall Goal and Project Purpose are expected to be achieved by the target years of 2015 and 2013 respectively. While there are still a significant number of vacancies in DCCs, some positive signals can be observed such as the partial recruitment of staffs, preparation for the extension of landfill sites and conceptual planning of new projects. These movements could be regarded as signs of the improvement of capacity of WMDs for upgrading their solid waste management services for citizens.

High Relevance indicates the high expectations of citizens of Dhaka City for better waste management services. WBA activities were effectively conducted and realized a variety of positive effects. A number of COs, CIs and cleaners have significantly developed their capacities through participating WBA activities. Through the improvement of waste management in the city, local residents' satisfaction to waste collection services has been improved and they have become further conscious about waste management.

3-6 Recommendations

(1) Recommendations for WMD Staffing

- 1) All the vacant posts in WMDs are expected to be filled with permanent staffs. Especially, it is urgently anticipated to assign the executive level officers such as Additional CWMOs, Deputy CWMOs, Executive Engineers (DSCC) and zone level management officers of Assistant CWMOs. And transfer of drivers and equipment from Transport Depart to WMD is urgently required.
- 2) It is expected DCCs to enhance the human resources of their workshop especially mechanics who maintain and repair collection vehicles.
- 3) It is expected to permanently employ the LMU staffs of Matuail landfill site and to make haste to recruit the staff of LMU of Amin Bazar landfill site. Machine operators, helpers and heavy equipment to be engaged in the landfills should be transferred from Mechanical Division to WMD.
- 4) Budget officers are supposed to be assigned to both WMDs of north and south.

(2) Recommendations for WMD Management

- 1) Clean Dhaka Master Plan must be revised to be based on the actual population of service areas. Both DNCC and DSCC are supposed to make a middle to long term master plan (M/P II) in collaborative manner. This could be a model of the SWM plan for other urban areas such as New City Corporations.
- 2) The construction of ward offices in remaining wards is awaited as bases of community-based SWM such as WBA. There are 17 ward offices among 92 wards in total as of November 2012. Therefore, more construction of ward offices is recommended.
- 3) It is expected DCCs to make necessary arrangements for WBA core members to spend more time and efforts for the expansion of WBA activities to non-WBA wards.
- 4) It is expected DCCs to make a regular open meeting for monitoring of WMD's activities like the seminar for revising WMD Directives.
- 5) It is highly recommended to continue SWM accounting system for both DCCs. Based on the SWM accounting, bottom-up budgeting is expected to be continued.

(3) Recommendations for WMD Activities

- 1) Since Amin Bazar landfill site does not fully operate, it is highly required to complete the construction in order to realize the full-scale operation as soon as possible.
- 2) Planning and periodical implementation of environmental monitoring for both Matuail and Amin Bazar landfills are highly recommended.
- 3) WMDs are to provide safety-gears to cleaners timely and continuously.

(4) Others

- 1) It is required DCCs to further improve their capacities of waste management services in order to collect not only 66% but 100% of waste generated in the city.
- 2) It is anticipated to incorporate the experience and knowledge of the project (PDCA operation of SWM, efficient waste collection by compactors, participatory WBA, sanitary landfill site, integrated management by a single agent such as WMD, etc.) in national level laws and regulations relating to solid waste management specifically in the strategy and guidelines currently in the process of preparation by DOE.
- 3) It is expected to incorporate the experience and knowledge of the project in the comprehensive city planning such as a plan of New City Corporation in its early stages. It is recommended to establish a network among city corporations and Pourshavas in Bangladesh in order to promote sound solid waste management based on the DCCs' experiences.
- 4) It is expected to make mass media involved for further publications of some central concept of the waste management model developed by the project such as community awareness rising and participatory approach.

3-7 Lessons Learned

- 1) WBA can be introduced to urban waste management projects as a unique model of a community participatory waste management approach.
- 2) The modernization of secondary collection system such as the introduction of compactors could be significantly effective especially in densely populated areas.
- 3) This project has integrated other cooperation schemes such as EGAP, JDCF and JOCV into its activities and it has eventually made them to be a program. However, because it was not originally designed as a program, some components such as the construction of landfill sites could not make synergy effectively

with other components. A program has to be planned and designed as a program from the beginning.

- 4) Since the executive level officers of WMDs could not be sufficiently assigned to the project as counterparts, the development effects of the project could not be fully realized.
- 5) In this project, JCC has not been functioned well as a coordinating organization among relevant organizations. For the effective project implementation, involvement of high level executive officers through JCC would be highly required.
- 6) In order to succeed program approach, it is necessary to monitor activities regularly, modify activities and revise action plan flexibly according to the result of the monitoring. One of the good example of Clean Dhaka is introduction of WBA that is not included original M/P.