

## Summary Sheet for Terminal Evaluation

<b>I. Outline of the Project</b>	
Country: Dominican Republic	Project Title: Project for Appropriate Waste Management in Santo Domingo de Guzman, National District
Sector: Public Utility Works/Urban Sanitation	Cooperation Scheme: Technical Cooperation Project
Division in charge: Environmental Management Division, Global Environment Department	Total Cost (at the time of evaluation : Approximately, 180 million yen.
Period of Cooperation: 3 Years (2009.7-2012.7)	Partner Country's Implementation Organization: General Directorate of Urban Cleansing and Equipment (DIGAUE), Santo Domingo National District Municipality (ADN)
	Supporting Organization in Japan: EX Research Institute Ltd., and Kokusai Kogyo Co., Ltd.
<p><b>1 Background of the Project</b></p> <p>In the Santo Domingo metropolitan area, where approximately 2.5 million tourists visit every year, daily per capita generation of solid waste amounts to 1.26 kg/day (2005), comparable to that of higher-income countries. In the metropolitan area, various environment-related problems are becoming serious due to rapid urbanization. Among others, solid waste management is considered one of the most crucial issues to be tackled urgently.</p> <p>In particular, the Santo Domingo National District, with population of about 1.0 million and area of 93.5km<sup>2</sup>, is most urbanized and, at the same time, most seriously affected by solid waste problems in the metropolitan area, has been working on improving solid waste management ahead other adjacent municipalities.</p> <p>Under the circumstances, in July 2005, JICA conducted the Study on Integrated Solid Waste Management Plan in Santo Domingo de Guzman National District (the Study). Through the Study, Integrated Solid Waste Management Plan (Master Plan; M/P) was prepared and a cleaning ordinance, the first in Dominican Republic, was established in August 2006.</p> <p>Taking advantages of experiences and knowledge gained from the pilot projects conducted under the Study, ADN (Santo Domingo National District Municipality) tried to establish a database system in terms of contract with private collection firms, solid waste management and financial management as described in M/P. ADN also tried to strengthen financial base through improving service fee collection rate.</p> <p>However, some activities recommended in M/P, such as, i) waste minimization, ii) public awareness raising in terms of waste discharge practices, and iii) maintenance of collection and transportation vehicles, were not fully achieved yet due to lack of knowledge, skill or experiences of ADN staff. Consequently, ADN requested the Government of Japan to dispatch experts in waste management field to implement Technical Cooperation Project.</p> <p>In response to this request, JICA carried out a preliminary survey in September 2008 and decided to implement a technical cooperation project aiming at i) strengthening the capacity of ADN on integrated solid waste management, ii) consolidation of solid collection system through vehicle maintenance and public awareness, and iii) introduction of 3Rs (Reduce, Reuse and Recycle). In February 2009, Record of Discussion, comprising of the basic plan, implementation setup, demarcation of responsibilities, etc. was signed.</p> <p>The technical cooperation project (the Project) has been implemented since July 2009, with a cooperation period of 3 years, to achieve above said objectives through dispatch of experts in the relevant fields for technology transfer.</p>	
<p><b>2 Project Overview</b></p> <p>To implement a technical cooperation project for three years aiming at i) strengthening the capacity of ADN on integrated solid waste management, ii) consolidation of solid collection system through vehicle maintenance and public awareness, and iii) introduction of 3Rs (Reduce, Reuse and Recycle) in the Santo</p>	

Domingo National District.		
<p><b>(1) Overall Goal:</b> Targets of the Integrated Solid Waste Management (Integrated SWM) Plan (revised M/P) are substantially achieved by 2015.</p> <p><b>(2) Project Purpose:</b> Integrated SWM in Santo Domingo de Guzman, National District, is enhanced.</p> <p><b>(3) Outputs:</b></p> <ol style="list-style-type: none"> <li>1. Capacity of ADN on Integrated SWM planning is strengthened.</li> <li>2. Solid waste collection system is consolidated through improvement on vehicle maintenance and public awareness.</li> <li>3. 3Rs (Reduce, Reuse, Recycle) approach is introduced to divert waste from final disposal site.</li> </ol>		
<p><b>(4) Inputs (at the time of evaluation)</b></p> <p><b>Japanese Side</b></p> <p>Total cost: 180 million yen</p> <p>Experts: 38.7MM (Solid Waste Management, Waste Minimization, Solid Waste Education and Awareness Raising/3R Promotion, Vehicle maintenance, etc.)</p> <p>Provision of Equipment: approximately 17.6 million yen</p> <p>Local Cost Assistance: approximately 18.5 million yen</p> <p>Overseas Training: 15 persons (2 in Japan, 13 in the third countries)</p>		
<p><b>Dominican Republic Side</b></p> <p>Assignment of counterpart: 26 persons</p> <p>Land and Facility (office space for the experts, and the project staff, etc.)</p> <p>Running cost: salaries, utilities, etc.</p> <p>Procurement of brush chipper: 1 set</p>		
<b>II. Joint Evaluation Team</b>		
<b>Members of the Joint Evaluation Team</b>	<p><b>Japanese Side</b></p> <p>Dr. Mitsuo YOSHIDA (Team Leader), Senior Advisor, JICA</p> <p>Mr. Issei AOKI (Evaluation Planning/Solid Waste Management), Assistant Director, Environmental Management Division 2, Environmental Management Group and Officer for Climate Change, Global Environment Department, JICA</p> <p>Dr. Hideaki HIGASHINO (Evaluation Analysis), Senior Consultant, RECS International Inc.</p>	<p><b>Dominican Republic Side</b></p> <p>Mr. Julio Ortiz, Ministry of Environment and Natural Resources</p> <p>Ms. Glenys Gonzalez, Ministry of Economic Planning and Development</p> <p>Ms. Paula De León, Mancomunidad de Santo Domingo (IDB Project)</p>
<b>Period of Evaluation</b>	January 9 to January 28, 2012.	Type of Evaluation: Terminal Evaluation
<b>III. Results of Evaluation</b>		
<b>1. Project Performances</b>		
<p><b>Project Purpose:</b> <i>Integrated SWM in Santo Domingo de Guzman, National District, is enhanced.</i></p> <p>* The Joint Evaluation Team verified the Project Purpose achievement. As a result, the Team judged that "Integrated SWM in Santo Domingo de Guzman, National District" was enhanced to a reasonable extent based on the facts that i) Waste collection rate seems 100% (Indicator 1), ii) Waste reduction rate of 8.5% is achieved (Indicator 2), iii) Prompt response to complaints to ADN (Indicator 3), iv) High satisfaction rate for collection service (Indicator 4).</p> <p>* ADN has been working on solid waste management committedly, and according to the result of the social survey conducted by JICA in January 2012, majority of the residents have confidence on the collection service implemented by ADN.</p> <p>* Outputs (Strengthening the Capacity of ADN on Integrated SWM planning, consolidation of solid waste collection system through improvement on vehicle maintenance and public awareness, as well as introduction of 3Rs (Reduce, Reuse, Recycle) approach to divert waste from final disposal site) were reasonably achieved and contributed to the achievements of the Project Purpose considering the result of capacity assessment of the Project C/P. (Achievements of Outputs are described in the Terminal Evaluation Report. Achievements of main activities are summarized in ANNEX 5 in the report)</p> <p>* There are some difficulty in verifying the achievement of the Project due to in appropriate Indicators, lack of quantitative information and its difficulty to acquire such data.</p>		

**Questionnaire Survey Results (total respondents: 11)**

	Response on the degree of Achievement		
	Very much	To some extent	Hardly
<b>Indicator 1: Collection rate target on revised M/P (100%)</b>	<b>7 persons</b>	<b>0</b>	<b>0</b>
<b>Indicator 2: Waste Minimization target on revised M/P (8.5%)</b>	<b>5 persons</b>	<b>2 persons</b>	<b>0</b>
<b>Indicator 3: Number of complaints received at the ADN call center</b>	<b>4 persons</b>	<b>3 persons</b>	<b>0</b>
<b>Indicator 4: Satisfaction rate for collection service</b>	<b>4 persons</b>	<b>3 persons</b>	<b>0</b>

Source: Joint Evaluation Team

**Project Purpose Achievements according to Indicators**

Indicators	Achievement
<Indicator 1: Collection rate target on revised M/P (100%)>	<p>*Generally, waste collection rate defines as the collection amount divided by waste discharge amount. ADN has waste collection amount data in weight at the transfer station and the final disposal site. However, waste discharge amount cannot be clearly determined due to lack of data such as waste generation ratio and its parameters. Consequently, it is difficult to verify the actual collection rate in the target area at the moment.</p> <p>*Meanwhile, according to available data of ADN, waste collection amount has shown its rapid increase from year 2006 to 2009 independently of population growth as shown in the figure and the table below. After this period, waste collection amount became stable. Form the trend, it can be judged that waste collection ratio is converging to its capacity, which is 100%.</p> <p>*Taking into consideration that the present ADN administration showed its commitment to keep the city clean (i.e., it can be interpreted as a commitment of provision of satisfactory collection services) by raising slogan of “Ciudad Limpia, Orgullo de Todos (Clean city; the pride of all citizens)”, and that ADN is maintaining possible maximum collection rate at the moment by employing private sectors (large companies and community foundations) in addition to direct collection services, it also can be judged that, in a practical sense, almost 100% collection rate is achieved except for the areas where collection vehicles cannot approach and small areas due to unexpected circumstances.</p> <p>*In 2012, ADN has a plan to introduce 18 dump trucks, 6 small-scale compactor trucks, and a front loader to enhance the collection service. The small-scale compactor will improve access to the areas where it used to be difficult to implement collection service due to narrow streets, which will result in better collection rate. (15 inspectors cover every street everyday to provide qualified information in terms of collection service.)</p>
<Indicator 2: Waste Minimization target on revised M/P (8.5%)>	<p>*Waste haulage amount to the final disposal site estimated based on the generation ratio in 2011 is 2,103 ton/day and actual being 1,925 ton/day. Actual amount is approximately 91.5% of the estimated amount. In other words, this means that waste reduction rate of 8.5% is achieved in 2011 although it should be understood that the reduction is achieved not directly through the Project activities but also through various activities including those of unidentified waste collectors.</p> <p>*At the moment, the verifiable amount of waste minimization under the Project is limited in pruning waste chipping and used paper collection activities, the total amount of which is to be approximately 11ton/day at the maximum (pruning waste and used paper recycle).</p>
<Indicator 3: Number of complaints received at the ADN call center >	<p>*The number of complaints received at the ADN call center from 2009 to 2011 increased (5,007→6,703→7,132). The number of calls increases or decreases depending on the quality of collection service.</p> <p>*However, in reality, other factors such as weather conditions (e.g. strong rainy season that affects the access to the final disposal site, tariff hike, etc.) might also affect the number. Therefore, it is difficult to judge the quality of collection service of ADN by the number of claims received at the ADN call center.</p> <p>*Meanwhile, as shown in the graph below, the rate of resolution is stable, and nearly 90 % of the complaints were responded and resolved within 48 hours (right column), which is considered to implicate the quality of the collection services from the standpoint of claim management.</p>
<Indicator 4: Satisfaction rate for collection service >	<p>*According to the social survey data conducted by JICA, the rate of satisfaction is 64% and dissatisfaction rate was 35%. The main reason for the dissatisfaction is the long interval between services, although service is provided in most areas daily or every other day basis. Those who are not satisfied with the collection service because it is not reliable count for only 6%.</p>

## 2. Summary of Evaluation Results

All outputs are achieved to satisfactory level based on the assessment result of the capacity of the Project counterparts. Details are described as follows;

Output 1: *Capacity of ADN on Integrated SWM planning is strengthened*

The capacity of integrated waste management of ADN is improved thanks to project activities such as revision of revised M/P, making of training material, operation and supervision of workshops, etc.

Output 2: *Solid waste collection system is consolidated through improvement on vehicle maintenance and public awareness.*

Waste management system is systematized thanks to systematization of machinery management. Through the Pilot Project, waste discharge manner is improved.

Output 3: *3Rs (Reduce, Reuse, Recycle) approach is introduced to divert waste from final disposal site*  
3R approach is introduced based on the analysis of market condition. Cardboard recycling was carried out in Invi Area as the Pilot Project and students participated in the activities. Using 2 crusher machines and chipping waste were disposed. One more chipping machine will be provided in February 2012. The chipping capacity will be enhanced from 2 ton/day to 10 ton/day.

The results of evaluation based on the five evaluation criteria as summarized as in the table below. All outputs are achieved to satisfactory level Details are described as follows.

<b>Summary of Evaluation based on Five Evaluation Criteria</b>		
Criteria	Evaluation	Reasons/Comments
<b>Relevance</b>	<b>High</b>	(+) High relevance with the policies of Dominica and Japan (+) Relevance with the needs of residents
<b>Effectiveness</b>	<b>High-Moderate</b>	(+) Enhancement of ADN Capacity on ISWM in National District (-) Lack of data to objectively verify the achievements
<b>Efficiency</b>	<b>High</b>	(+) Appropriate Inputs by both the Dominica and Japan through dispatch of JICA experts, the third country trainings, Trainings in Japan and provision of equipment (+) Reasonable Outputs achievement
<b>Impact (Prospect)</b>	<b>Positive Impacts Expected</b>	(+) New categories of waste management services were introduced such as 3Rs and pruning waste disposal by chipping. (-) The prospect of Overall Goal cannot be judged clearly due to lack of data as in the case of the Project Purpose.
<b>Sustainability (Prospect)</b>	<b>High-Moderate</b>	(+) Commitment of DIGAUE to ISWM activities (+) Capacity enhancement of DIGAUE staff (+) Additional procurement of chipping machine by Dominican side for reduction of pruning waste (-) Tight budget condition of ADN

## 3. Factors that promoted realization of effects

### (1) Factors Concerning the Plan

Project formulation following the M/P and utilization of third country training contributed high efficiency. In addition, incorporating 3R activities, which Dominican side also highly interested in, into the Project contributed the achievement of Project purpose.

### (2) Factors concerning the Implementation Process

Continuous involvement of Ex-trainees as C/P contributed effectiveness. Creating confidence of local citizen through punctual collection services contributed to improve citizen's discharge manner and successful project implementation. In addition, JICA's social survey found that local citizens perception on environmental issues and ADN's activities were same as the direction of the Project.

## 4. Factors that impeded realization of effects

### (1) Factors Concerning to Planning

In appropriate indicators setting, lack of quantitative information and difficulty in data collection caused difficulty to evaluate the achievement of the Project purpose.

### (2) Factors Concerning the Implementation Process

Those indicators should have been modified through the project implementation. However, the Team

managed to evaluate the Project by collecting information and carrying out social survey.

## **5. Conclusion**

As a result of the Project activities since its commencement, capacity of ADN on Integrated SWM planning has been reasonably strengthened through various activities such as revision of M/P, preparation of training materials, managing workshops, etc. The revision of M/P is under progress and will be completed by the end of the Project, reflecting the results of the Inter-American Development Bank (IDB) study.

Solid waste collection system was consolidated to a satisfactory extent through systematization of collection vehicle management system and more than 80% of 30 collection vehicles, older than 10 years, are still operational due to appropriate maintenance and repair. A pilot project for manner improvement for waste discharge practices was successfully executed in Invi and Antillas. The number of negligent waste discharge practices decreased in the pilot project areas and an expansion plan has been examined.

3Rs approach was introduced based on analysis of the recycle market conditions and the recycle mechanism designed. As an initial activity, a pilot project for waste paper recycle was implemented in a school in Invi and students participated in recycling. An expansion plan to 11 schools is under preparation. Pruning waste is disposed on daily basis by two chipping machines. Another chipping machine will be procured in February and the amount of prune waste to be disposed will be increased to 10 ton/day from current 2 ton/day within this year.

The Project had an impact on establishment of 3Rs Network, in September 2010 for promotion of 3Rs activities involving governmental organizations, local municipalities and private sectors as well.

Taking these achievements into consideration, the Joint Evaluation Team concluded the Project to be successfully terminated in July 2012 as scheduled in R/D.

In the subsequent chapter, recommendations that will guide for better management and progress of the Project activities are summarized based on the findings by the Joint Evaluation Team.

## **6. Recommendations**

- (1) As regards the achievement of the Outputs, Project Purpose and Overall Goal, it is difficult to verify them due to lack of data. ADN is recommended to set up verifiable (quantitative) goals and make a plan to obtain data to verify the performances. Modification of the current indicators of PDM should be also considered to secure the sustainability of the Project.
- (2) The experience and know-hows that C/P obtained through the Project, namely; ones related to collection vehicle maintenance and repair, pilot project management for waste discharge practice improvement, introduction of 3Rs activities, etc., are needed in many local municipalities for better solid waste management. ADN is recommended to transfer the knowledge and skills to them in collaboration with the Ministry of Economy, Planning and Development, the Ministry of Environment, the Ministry of Education and related institutions.
- (3) It is evident that enhancement of institutional capacity has been obtained. Therefore, it is recommended to continue the capacity development in solid waste management. For assuring technology and knowledge transfer by ADN mentioned in (2), it is necessary to further enhance capacities of C/P, both in quality and quantity before the termination of the cooperation period. In particular, capacity enhancement of C/P in the field of vehicle maintenance is an urgent issue since ADN has a plan to purchase collection vehicles in 2012. JICA and ADN are requested to take necessary actions to strengthen the capacities of C/P in the fields (e.g. dispatch of a short-term expert or senior volunteer staff, etc.).
- (4) Based on the social survey conducted by JICA in 2012, in order to increase the satisfaction rate of the residents in terms of waste collection services, options are either to improve service quality or means of waste discharge from households. Therefore, public awareness raising, reducing wastes amount through expansion of 3Rs activities, as well as pruning waste disposal should be enhanced. ADN is recommended to continue and expand these activities steadily in a practical scale.
- (5) In line with (4), in order to grasp the citizens' opinions toward sound solid waste management, it is recommended to ADN to conduct a similar social survey that might help further improve their services effectively and efficiently.
- (6) It is recommended that the training materials prepared under the Project be updated as necessity rises in

the future.

- (7) In order to maintain the positive effect of vehicle maintenance system established under the Project, spare parts procurement shall be executed without delay. ADN is recommended to ensure to provide necessary budget to procure spare parts.
- (8) ADN should make efforts to improve the fee collection rate and reduce unnecessary expense to secure financial soundness.
- (9) Depending on the IDB study (Master Plan Study for ISWM in Mancomunidad del Gran Santo Domingo) results on the waste disposal site, the following issues are to be reviewed again:
  - Issues related to intermediary transportation system; and,
  - Issues related to relocation and closure of the existing landfill site.

## **7. Lessons Learned**

- (1) In appropriate indicators setting, lack of quantitative information and difficulty in data collection caused difficulty to evaluate the achievement of the Project purpose. Setting up baseline and objectively verifiable indicators enables objective evaluation of a project.
- (2) Appropriate inclusion and feedback of information from stakeholders enable achievement of project objectives.
  - \*In January 2012, JICA conducted a social survey on citizens' awareness on environmental issues in the Santo Domingo metropolitan area. In the survey, citizens' opinions on solid waste management activities by ADN were analyzed and it was confirmed that citizens have confidence on ADN's collection service. However, at the same time, it was figured out that there are issues to be resolved. DIGAUE staff recognized that information from stakeholders collected through a social survey, etc., and its feedback is important for effective and efficient project management of a project.
- (3) Meeting with the needs of C/P and high commitment and a good teamwork contribute to success of a project.
  - \*Especially, in case of the Project, there have been few turnovers of staff during the past 2.5 years since its commencement and C/P continued taking in charge of their respective tasks. This enhanced the sense of responsibility of each staff and enabled the accumulation of knowledge and skills obtained through the Project implementation. In addition, effective use of ex-trainees of overseas training as well as teamwork led to the successful achievement of the Project.

## **8. Follow-up Situation**