

Country Name	<b>Project for Appropriate Waste Management in Santo Domingo de Guzman, National District</b>
Dominican Republic	

**I. Project Outline**

Background	In the Santo Domingo metropolitan area, where approximately 2.5 million tourists visit every year, daily per capita generation of solid waste amounted to 1.26 kg/day (2005), comparable to that of higher-income countries. Among various environment-related problems attributed to rapid urbanization, solid waste management was considered as a crucial and urgent issue. Santo Domingo National District is the most urbanized district in the metropolitan area and it was seriously affected by solid waste problems. JICA conducted the Study on Integrated Solid Waste Management Plan <sup>1</sup> in Santo Domingo de Guzman National District in 2005 to prepare the Integrated Solid Waste Management (SWM) Plan (M/P). However, some activities recommended in M/P were not fully implemented due to lack of knowledge and experience of National District Municipality (ADN), and therefore technical cooperation was requested.																
Objectives of the Project	Through the capacity development of ADN and pilot projects with the 3Rs approach, the project aimed at enhancing ADN's SWM in order to improve waste collection, minimize waste, and increase the people's satisfaction on ADN's services, thereby contributing to achieving the targets of the Integrated Solid Waste Management Plan. *3Rs: Reduce, Reuse and Recycle.																
	Overall Goal: Targets of the Integrated Solid Waste Management (Integrated SWM) Plan (revised M/P) are substantially achieved by 2015. Project Purpose: Integrated SWM in Santo Domingo de Guzman, National District is enhanced.																
Activities of the project	<ol style="list-style-type: none"> <li>1. Project site: Santo Domingo de Guzman, Gran Santo Domingo and surrounding areas.</li> <li>2. Main activities: Revision of the M/P, development of the database for vehicle management, public awareness activities on waste discharge, pilot projects (appropriate waste discharge, paper recycling, and pruning waste management), etc.</li> <li>3. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Dominican Republic Side</td> </tr> <tr> <td>1) Experts: 9 persons</td> <td>1) Staff allocated: 26 persons</td> </tr> <tr> <td>2) Training in Japan: 1 persons</td> <td>2) Land and facilities: Office space and equipment, etc.</td> </tr> <tr> <td>3) Training in the third country: 15 persons</td> <td>3) Operation cost for staff salaries, office utilities, etc.</td> </tr> <tr> <td>4) Equipment: PC, printer, brush chipper, etc.</td> <td></td> </tr> <tr> <td>5) Operation cost for hiring local consultants, travel expenses, facility rental, etc.</td> <td></td> </tr> </table> </li> </ol>					Japanese Side	Dominican Republic Side	1) Experts: 9 persons	1) Staff allocated: 26 persons	2) Training in Japan: 1 persons	2) Land and facilities: Office space and equipment, etc.	3) Training in the third country: 15 persons	3) Operation cost for staff salaries, office utilities, etc.	4) Equipment: PC, printer, brush chipper, etc.		5) Operation cost for hiring local consultants, travel expenses, facility rental, etc.	
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Ex-Ante Evaluation	2009	Project Period	July 2009 to July 2012	Project Cost	(ex-ante) 200 million yen (actual) 223 million yen												
Implementing Agency	National District Municipality (Ayuntamiento del Distrito Nacional (ADN))																
Cooperation Agency in Japan	EX Research Institute Ltd., Kokusai Kogyo Co., Ltd.																

**II. Result of the Evaluation**

<Special perspectives considered in the ex-post evaluation>

- As same indicators were set for the Project Purpose and Overall Goal, there is not a causal linkage between them but rather the latter is a continuing status of the former. So it can be pointed out there was a minor problem in the project design as discussed in "Relevance". In this ex-post evaluation, however, the Project Purpose are judged as the design having 2 goals; "to strengthen SWM capacity" and "to achieve the revised M/P".

- For the Indicator 1 of the Project Purpose (waste collection rate which is calculated with waste collection amount divided by waste discharge amount), ADN did not have the data on waste discharge, so the waste collection amount was used as a supplementary information to verify the improvement of waste collection during the project period. For the ex-post evaluation, ADN calculated the collection rate based on the population and estimated waste discharge amount.

- The Indicator 3 of the Overall Goal was set as "financial soundness." However, the indicators was not clearly defined during the project period. For the ex-post evaluation, the amount of budget allocation was used for its verification.

- The target area was Santo Domingo de Guzman, National District, but pilot project activities were implemented in several sites of the municipality. The indicators of the Project Purpose were not specifically set for verifying the effects brought by the pilot projects in these limited sites. However, it was difficult to separate the project contribution from the achievement in the whole municipality.

**1 Relevance**

<Consistency with the Development Policy of the Dominican Republic at the time of ex-ante evaluation and project completion>

Waste issues were discussed as one of the programs in the environment area in the president's inauguration speech in 2008. In the National Development Strategy of the Dominican Republic (2010-2030), environment preservation is regarded as one of the four main components. Thus, the project was consistent with the development policy of the Dominican Republic at the time of ex-ante evaluation and project completion.

<Consistency with the Development Needs of the Dominican Republic at the time of ex-ante evaluation and project completion >

Among various environment-related problems attributed to rapid urbanization, solid waste management was considered a very

<sup>1</sup> According to the National Policy on the Integrated Solid Waste Management, "integrated solid waste management" means adequate waste management in all its stages, from generation to reutilization or final disposal, with criteria of prevention, minimization, eco-efficiency and risk management in each of them.

crucial and urgent issue. Santo Domingo National District is the most urbanized in the metropolitan and it was seriously affected by waste issues. There were still great needs for development of the solid waste management until the time of project completion.

<Consistency with Japan's ODA Policy at the time of ex-ante evaluation>

Based on the results of working level meetings on economic cooperation policy to the Dominican Republic held in July 2007, it was decided to convey continuous and effective cooperation to the country in the areas including environmental preservation and recovery. Related to this, one of the contents is antipollution control in and around the metropolitan area through enhancing environmental management capacity of relevant municipalities centering on solid waste and sewage management.

<Appropriateness of the Project Plan and Approach>

This project aimed at enhancing the solid waste management in the target municipality through the capacity development of ADN, improvement of the waste collection system and introduction of 3Rs for waste diversion, thereby achieving the targets in the revised M/P. But the medium-long term impact and the causal linkage to the impact have remained unclear as the achievement goals duplicated with the indicators of the Project Purpose.

<Evaluation Result>

In light of the above, there was a minor problem with the project design, but as a whole, the relevance of the project is high.

## 2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>

The Project Purpose was mostly achieved by the project completion. It was surmised that most of the waste was collected and the waste minimization rate was 8.5%, as planned. These were achieved through the capacity development of ADN. The capacity of ADN personnel regarding the understanding of the legal and institutional framework, waste collection and transfer, etc. increased during the project and was assessed that they reached the level of being able to manage without JICA experts' support. The raised awareness of the residents also contributed to the improved waste collection and minimization. These resulted in the residents' satisfaction with ADN services. However, it should be pointed out that it was difficult to clearly distinguish the project contribution to the achievement of the Project Purpose from the influence of the external factors such as illegal dumping.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have mostly continued. The waste collection has increased. Though the collection rate has been mostly stable for the last four years, it was lower than the rate estimated during the project period. The reason of the decrease was not confirmed. The waste minimization rate has increased mainly attributed to pruning waste management and 3R activities explained later. The number of complaints against ADN has decreased, and about 98% of the complaints to the General Directorate of Urban Cleaning and Equipment (DIGAUE) were resolved. Regarding the pilot project introduced by the project, two projects for improvement of waste discharge and pruning waste management have continued in INVI and Antillas areas. Experiences from pilot projects have served as guidelines for ADN to learn what approach works for waste delivery at the areas and also to diffuse this approach to other areas. The pruning pilot project has been even expanded to neighbor organizations and schools, but the amount of pruning waste has decreased due to malfunctions of one of the three machines provided by the project. According to the survey of 20 residents in the pilot project sites, 55% of them are satisfied with ADN's services.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

It can be judged that the Overall Goal has been mostly achieved. The estimated waste collection has increased and the waste minimization rate has increased. Regarding the indicator on the financial soundness, though the budget of DIGAUE has increased, no sufficient data was available from ADN, and therefore it was not possible to judge the achievement.

<Other Impacts at the time of Ex-post Evaluation>

First, the project experience has been extended to other municipalities including San Gregorio de Nigua, Dajabon, Neyba, Salcedo, Santo Domingo Este, Santiago de los Caballeros, San Antonio de Guerra and Boca Chica, through the seminars and workshops organized by ADN and dissemination of the manuals developed by the project which showed improvement in ADN's service delivery of the waste collection. Second, ADN has played a key role as a collaborating organization in JICA Project for Institutional Capacity Development on Nation-wide Solid Waste Management (2014-2017) by providing training to the personnel of 32 provinces and 60 municipalities.

Collection and transfer of the waste cause emission of the harmful gases and pollution of air, water, and soil, but these are usual impacts and no other extra complaints have been confirmed with regard to the natural environment. Socially, increased capacity of ADN for waste collection has resulted in the decrease of the waste for the street pickers, while those have not been affected at the final disposal site.

<Evaluation Result>

The Project Purpose was achieved by the project completion, and the effects have mostly continued. Regarding the Overall Goal, targets in the indicators have been mostly achieved except for finance and several other positive impacts have been reported. Considering all these factors, the effectiveness/impact of the project is high.

### Achievement of project purpose and overall goal

Aim	Indicators	Results
(Project Purpose) Integrated SWM in Santo Domingo de Guzman, National District is enhanced.	1. Collection rate target on revised M/P (100%)	(Project Completion) <u>Achieved</u> . - The collection amount increased from 2006 to 2009 independently of the population growth and then remained stable. From this, it was surmised that most of the wastes were collected except for the areas where collection vehicles could not enter. (Ex-post Evaluation) <u>Mostly continued</u> . - The estimated collection rate were around 85% (85% in 2012, 82% in 2013, 85% in 2014 and 85% in 2015). - The volume of waste collection increased from 715,148 ton in 2012 to 735,482 in 2016.
	2. Waste Minimization target on revised M/P (8.5%)	(Project Completion) <u>Achieved</u> . - It can be interpreted that waste minimization rate was 8.5%.

		(Ex-post Evaluation) <u>Continued</u> . - The waste minimization rate has increased.																								
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	3. Number of complaints received at the ADN call center	(Project Completion) <u>Achieved</u> . - The number of the complaints received at ADN call center was 7,132 in 2011. The rate of resolution was 85.6% in 2011, though it decreased slightly from 88.4% in 2009.(Ex-post Evaluation) <u>Continued</u> . - The complaints received by ADN decreased from 2,043 in 2012 to 1,750 in 2015. Among them, approximately 98% of the complaints received by DIGAUE were resolved.																								
	4. Satisfaction rate for collection service	(Project completion) <u>Partially achieved</u> . - 64% of the residents were satisfied with waste collection services in 2012. The satisfaction rate in the pilot area was 77%. (Ex-post Evaluation) <u>Partially continued</u> . - According to the survey conducted by ADN in September 2016, 11 among the 20 interviewed residents (55%) answered that they were satisfied with the collection service.																								
(Overall goal) Targets of the Integrated Solid Waste Management (Integrated SWM) Plan (revised M/P) are substantially achieved by 2015.	1. Collection rate target (2015) on revised M/P 2. Waste Minimization target (2015) on revised M/P 3. Financial soundness target (2015) on revised M/P	(Ex-post Evaluation) <u>Mostly achieved</u> . - Refer to the achievement of the Indicator 1 of the Project Purpose. (Ex-post Evaluation) <u>Achieved</u> . - Refer to the achievement of the Indicator 2 of the Project Purpose. (Ex-post Evaluation) <u>N/A</u> . -The budget of ADN and allocated budget to DIGAUE has annually increased. - The information on the expenditure was not available.																								

Source: ADN.

### 3 Efficiency

The project period was as planned, but the project cost exceeded the plan (ratio against the plan: 100% and 112%, respectively). The reason for the cost excess was not confirmed. Therefore, the project efficiency is fair.

### 4 Sustainability

#### <Policy Aspect>

The integral solid waste management is considered as the most suitable alternative for promoting 3Rs approach in the National Development Strategy (2010-2030). The Policy for the Municipal Integrated Solid Waste Management has been launched by the Ministry of Environment and Natural Resources since 2014. Also, a bill for the Solid Waste Management Law was being discussed in the congress at the time of the ex-post evaluation survey.

#### <Institutional Aspect>

DIGAUE of ADN is responsible the municipal solid waste management such as waste collection, waste hauling to the transfer station and final disposal site, and street cleaning. It also develops the programs of the waste reuse and recycling with the Ministry of Environment and Natural Resources, conduct awareness raising activities for the residents, and advises the industry sector on clean technologies and decontamination activities. DIGAUE has approximately 1,400 personnel, which is sufficient for performing its responsibilities. DIGAUE has 31 compactor trucks of which only 9 are in operation, 7 dump trucks, 3 pruning machines including 2 provided by the project (1 out of order), 10 light vehicles for control tasks. These vehicles and spare parts are managed with the database. Waste collection works are contracted out to the private companies and community enterprises. Their work is monitored with the GPS devices installed in each unit. Since the project completion, ADN has not prepared the annual plan and budget for the environmental education activities and 3Rs projects, due to the budget limitation.

#### <Technical Aspect>

The personnel of DIGAUE has sufficient knowledge and skills for the integrated solid waste management, as some have more than 7-year working experience and the personnel have training opportunities given by ADN or JICA project. Five C/P personnel have remained at DIGAUE, as others were moved after the administrative change, and they function as trainers. The training manuals developed by the project have been used by DIGAUE for operation and also dissemination to other municipalities. The manual on electric system diagnosis and repair for compactor trucks developed by the project is not utilized, as the electric system is not working due to the unavailability of the spare parts in the country. (Compactor trucks themselves are used with the manual processing.)

#### <Financial Aspect>

The main source of the budget of ADN for solid waste management is the allocation from the central government. The budget of ADN has annually increased (3,900 million DOP in 2012 to 4,371 million (planned) in 2016), and the allocated budget for DIGAUE has annually increased, too (655 million DOP in 2012 to 1,206 million (planned) in 2016). However, it is not sufficient to expand the project experience in environmental education activities and 3Rs projects. Savings are not sufficient for vehicle depreciation costs for operation, either. In order to decrease the expenditure, DIGAUE has made efforts for making collection services more efficient through economic routes and reorganized schedule of the collection units, and also starting the collection service in the night time.

#### <Evaluation Result>

In light of the above, slight problems have been observed in terms of the institutional and financial aspect of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

## 5 Summary of the Evaluation

The Project Purpose was achieved by the project completion. In other words, the integrated solid waste management was enhanced and as its effects, waste collection has increased, and the waste minimization rate reached the target figure. As other impacts, ADN has shared their gained experience with other municipalities and nationwide in another JICA project. Thus, Effectiveness/Impact are high. Regarding the sustainability, due to the budget shortage ADN has not conducted some activities including preparation of the annual plan and budget for the environmental education activities and 3Rs projects. As for the efficiency, the project cost exceeded the plan, though the reason was not confirmed.

Considering all of the above points, this project is evaluated to be satisfactory.

## III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- In order not to lose the positive impacts achieved in improving waste delivery through the pilot project in INVI and Antilles areas, it is recommended to ADN to continue promoting and spreading this approach to other areas which have similar characteristics to the two areas in the National District.
- It is recommended to ADN to avoid, as far as possible, the rotation of its personnel who have skills for the integral solid waste management, so that the technical sustainability would be ensured. In case of the rotation or turnover, it is desirable to give necessary training for the newly assigned personnel.

Lessons learned for JICA:

- In this ex-post evaluation, there were difficulties in verifying the effects with the indicators set at the Project Design Matrix. As mentioned at the beginning of the report, the Overall Goal was not very appropriate; the Overall Goal was described as a continuing status of the effects of the Project Purpose, but not as effects caused by the Project Purpose. Therefore, same indicators were set for both the Project Purpose and Overall Goal, but the indicators themselves were not appropriate. In particular, one of the indicators was the waste collection rate which is calculated with waste collection amount divided waste discharge amount, but the necessary data were not available during the project period and after the project completion. Though the revision of the indicator was recommended by the Terminal Evaluation Team, it has not been conducted until the time of the ex-post evaluation. The reason is that ADN did not have the data including the waste generation rate to calculate the waste discharge amount. The Overall Goal is an objective which is expected after the project completion, but it is necessary to examine the appropriateness and data availability of the indicator by the mid-term of the project period, so that the achievement degree can be foreseen even before the project completion.



(ADN's personnel working in waste pruning)



(ADN's personnel giving training to municipalities)