E 3R Promotion Pilot Project

E.1 Background

The Municipality of the National District has been actively faced on solving the waste management problem. Supported by JICA, "The Study on Integrated Solid Waste Management Plan in Santo Domingo de Guzman, National District, Dominican Republic" had been carried out from July 2005 till March 2007 by formulating a Master Plan (hereinafter as M/P) targeting year 2015.

With experiences and knowledge gained through the pilot projects, ADN could re-design the collection routes, improve collection services and improve terms of contract with private collection firms with higher percentage of collection. Solid waste management has been contracted in approximately 80% of the area, with ADN's management and technical guidance. Also, data collection / management system has also been developed and improved on financial management system of the DIGAUE.

On the other hand, one of the main objectives of M/P which is to minimize waste amount to reduce burden on the solid waste management and to contribute to resource conservation, (15% reduction rate) has not been realized due to the limited scale of recycling market except part of recyclables like paper, cardboard, plastic, and iron waste and lack of technical experience.

Based on above mentioned situations, 3R promotion system was examined jointly with awareness raising of citizen on 3R namely "Reduce", "Reuse", "Recycling" through this Technical Cooperation Project supported by JICA.

E.2 Current situation and issues related to 3R

The recycling is still mostly informal and private in National District. Waste recyclers collecting in the city and waste pickers work in and around disposal site and middlemen of recycling mainly engage in recycling. The valuable resources collected partially

Though a part of the collected valuable resources distributes to the domestic market, most of the collected one is exported to foreign countries because there are few factories which use recycled raw material in the country.

E.3 Targets of Pilot Project

At first, the targets of 3R promotion Pilot Project were examined including a community as well as school. Especially, the selection of recycling company having capability of business is essential factor to implement the Pilot Project. During the period when 3R promotion project initiated, Green Love company also began operations which is the only one that has been capable to collect effectively the amount of waste that the project handles. However, one recycling company is not sufficient to conduct 3R implementation works and there are not other companies. Which have enough scale of business and trade/process various types of recyclables and is willing to collect waste at small scale. In addition, it was judged that the improvement of discharge manner of waste should have higher priority than 3R promotion in the community at the present stage; consequently, the provision of regular collection service and its supervision system began.

On the other hand, as the awareness raising for 3R promotion linked with environmental education in school is necessary according to the following reasons, the sustainability was verified through the Pilot Project.

- Environmental awareness raising for children through 3R practice is very significant.
- The awareness raising for children through 3R practice will be expected to contribute to improve the discharge manner in community level.
- Children think of themselves as knowledge multipliers; consequently, parents and acquaintances become involved.

The 3R promotion Pilot Project at the Victor Garrido Puello School located in Invi area where it is also conducted the storage improvement Pilot project; it was implemented to achieve the following objectives;

- Awareness raising for 3R through environmental education in school
- Practice of 3R promotion activity in school
- The establishment of organization and system in ADN to support the 3R promotion activity in the school

E.4 Procedure of Pilot Project

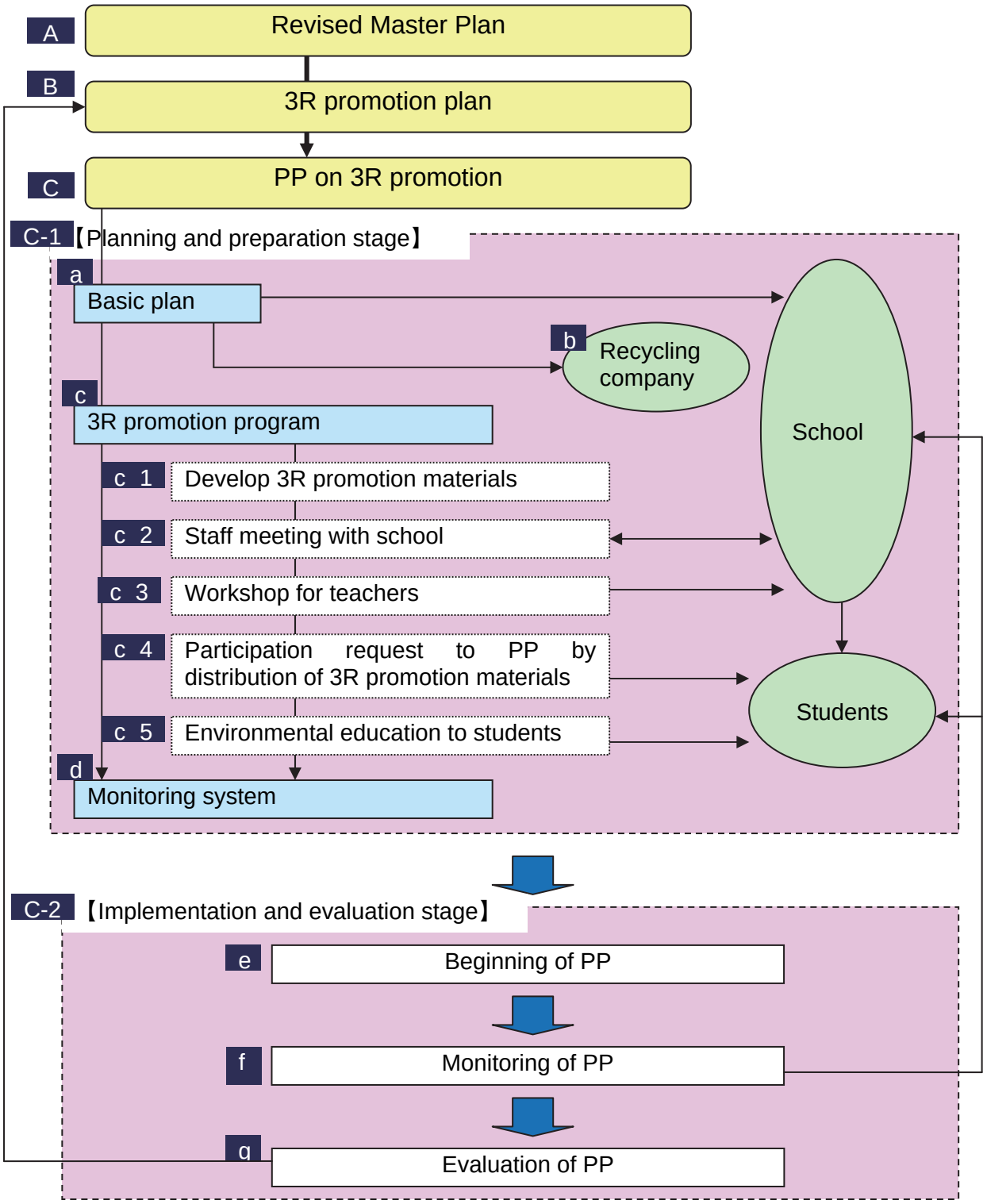


Figure E-1: Procedure of Pilot Project

A: One of the main points to revise Master Plan is reduction of the waste in order to establish activities which can be measurable and are developed according to the market. The 3R

for waste will be promoted simultaneously with awareness raising for 3R knowledge.

B: Based on the revised Master Plan, the 3R promotion plan which 3R promotion in school and awareness raising through environmental education will be developed.

C: To develop the 3R promotion plan, the 3R promotion Pilot Project (3R-PP) was implemented. The reliability, sustainability and expandability of 3R promotion and awareness raising through environmental education were monitored and evaluated. The evaluation will be reflected to the improvement plan.

3R-PP mainly consists of planning/preparing stage and monitoring/evaluating stage.

C-1: Planning/preparing stage consists of developing a 3R promotion system, creating awareness raising program and establishing monitoring system.

a. The paper recycling system in school was established.
b. The close coordination with recycling company was taken for the preparation of 3R-PP.
c. Awareness raising for 3R promotion consists of development of awareness materials, meeting with school, workshop for training of teachers and related persons, distribution of awareness materials and environmental education to students.
c-1 Awareness materials were developed according to objects, targets and uses.
c-2 As the Pilot Project is necessary to coordinate with school, several meetings with teachers were held in preparation stage of Pilot Project.
c-3 The workshop was hold for the teachers and related persons to train the skill which are to understand accurately the purpose and implementation method of PP and 3R promotion materials such as brochure and leaflet etc. and to request enthusiastically to participate to Pilot Project.
c-4 The 3R promotion materials were distributed to each family of students and request to participate and cooperative to 3R-PP.
c-5 The environmental education related with 3R promotion was carried out as a one of the education program before beginning 3R-PP.
d. The monitoring system was established to observe the Pilot Project and evaluate its result quantitatively.

C-2: The implementation, monitoring and evaluation stage

e. PP is advanced with discussing and improving the problems.
f. PP was monitored based on a material weighing system and the result was shared with communities through the community meetings and submission of progress report.
g. PP was continuously implemented for three (3) month, and the result was evaluated and influenced to the improvement plan.

E.5 Executing organization unit of Pilot Project

The executing organization unit and main task for the Pilot Project are shown in Table E-1.

Management sector of DIGAUE, Recycling Promotion center (CPR), Environmental Information center (CIA) were in charge of the management/coordination, technical issues and awareness raising issues respectively.

Table E-1: Executing organization unit and main task for the Pilot Project

Responsible sector and persons		Task
Sector	person	
Management sector of DIGAUE	Head: Heisor Arias Sub: Leomaris Henriquez Ana Beatriz Pou	Management/coordination of Pilot Project
Environmental Information center(CIA)	Juan José Guzmán Luis Taveras Marianna Szabo Anyelina Aquino Leomaris Henriquez Heisor Arias Massiel Moronta José Nuñez Pablo Mejía	Develop and use of awareness materials Coordination with recycling company Hold workshop Develop environmental education program and have a environmental education Monitoring Evaluation and expansion
Recycling Promotion center (CPR)	Amancio Pereyra Manuel Dajer Alan Alarcon Ana Beatriz Pou	Plan basic system for recycling activity in schools Coordination with recycling company Monitoring Evaluation expansion

E.6 Pilot Project schedule

The implementation schedule of Pilot Project is shown in Figure E-2.

The preparation of Pilot Project was begun from October 2010 and three (3) months until January were required to begin it.

Taking into account that about the same preparation period for this PP, Coca Cola Company began a contest with similar characteristics which main scenario is middle high school and the target waste is paper and PET bottles and will last six (6) months (from January 2011 to June 2011); for the PP, the primary school at Victor Garrido Puello was selected, the environmental education workshop for teachers and students took place just when this pilot project began.

The PP for Promotion of 3R began in February 2011 and the policy for expansion to other schools will be developed based on the results of the PP.

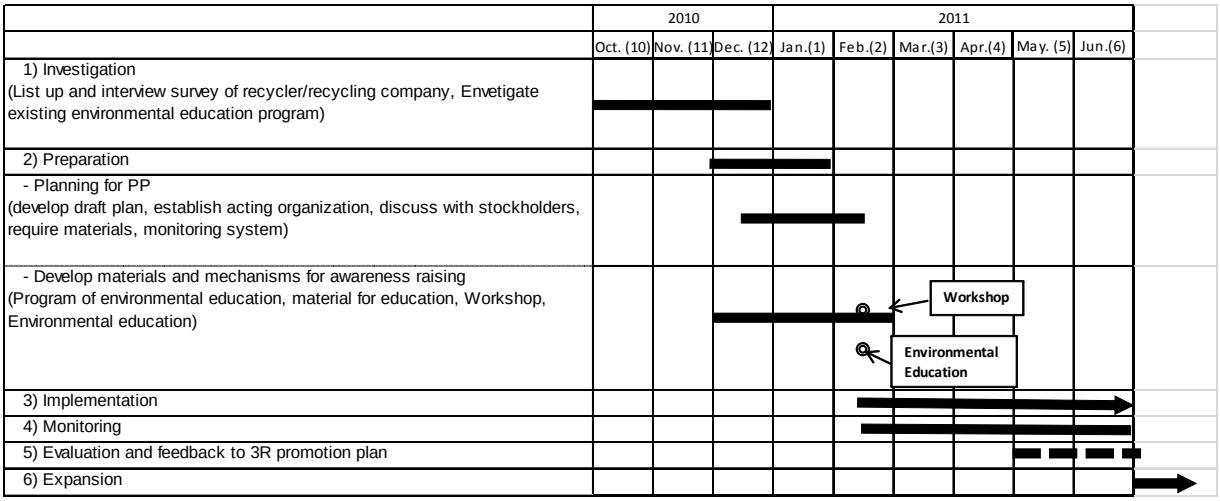


Figure E-2: Outline of implementation schedule for Pilot Project

E.7 Contents of Pilot Project

E.7.1 3R promotion system

a Basic condition

Environmental awareness raising for children through 3R practice is very significant as well as environmental education in school.

The awareness raising for children through 3R practice will be expected to contribute to improve the discharge manner in community level.

A company which manages recyclable materials with sufficient business and trading/process scale has been found for a variety of recyclable materials which are transported to recycling companies.

As above mention, the basic system for 3R promotion Pilot Project was established based on the following conditions;

- School implemented 3R-PP: Victor Garrido School in Invi
- Targeting recyclable: waste paper (newspaper, used notebook and office paper held carefully and without staple)
- Company which manages recyclable materials: Green Love

b Select the classes to participate in 3R-PP in Victor Garrido School

The following scenarios were prepared to select the degree and/or classes in Victor Garrido School to participate 3R-PP and discussed with school.

Table E-2: Scenarios for selection of the classes to participate 3R-PP in Victor Garrido School

	Target	Advantage	Disadvantage
Scenario 1	Kindergarten: 5-6 years old Primary school: 7-13 years old	During this age, kids are more apt to implement 3R PP because they are more proactive towards changes of attitude which are produced due to the characteristic dynamism of youngsters	Children this age are more restless than older ones; however, they are more easily controlled.

	Target	Advantage	Disadvantage
		of this age. Children are more open for innovation and adapt easier to changes which require new eras	
Scenario 2	Middle school: 14-17 years old	This group of students are more capable to understand and accept deeper the importance of this endeavor and, consequently, to disseminate the message to their homes and community in a more definitive manner. Additionally, they can also collaborate with expansion effort in other sectors.	This group of students has a character more defined which makes it more difficult to inculcate to them respect towards the Environment.
Scenario 3	Kindergarten, primary and middle school: 5-17 years old	This group of students would be complementary due to age difference, attitude, and abilities that would allow them to contribute diverse type of ideas and actions. Additionally, it could be obtained more representative student participation. Primary school students participate more proactively and experience by middle high school have more experience; both would be reflected during an implementation.	Because the target group would be larger, workshops and monitoring would have to more extensive; it would not be convenient taking into account that we are beginning the implementation of PP.

As a result, the scenario 1 was selected because it can be most expected the effect and manage easiest. The 19 classrooms in primary school will be targeted in the PP. The primary school has two shifts, namely morning and afternoon shifts. Totally, around 1,320 students of 38 (19 classrooms x 2 shifts) classrooms are learning in the school.

Table E-3: Targets of the PP in Victor Garrido School

	Class	Student	Note
Morning shift	19	700	45-47students /classroom
Afternoon shift	19	600	
Other room	5 additional rooms: administrative, library, (If person in charge of management of these rooms will not be able to selected, they should be excluded.)		
Teacher	63 teachers		

c Establish 3R committee in the school (Initial Proposal)

The following 3R committee will be proposed to manage effectively and to raise motivation of students. (It's need an arrangement with existing organization in the school).

c.1 3R Committee member

- Chair: Principal (Director)
- Acting director: Teacher in charge of PP
- Representative students selected from committee members
- Committee member:
  - ✓ Teachers in each class participating to the PP
  - ✓ Student delegated from classes
  - ✓ Person in charge of cleaning in school

c.2 Organization unit for 3R-PP

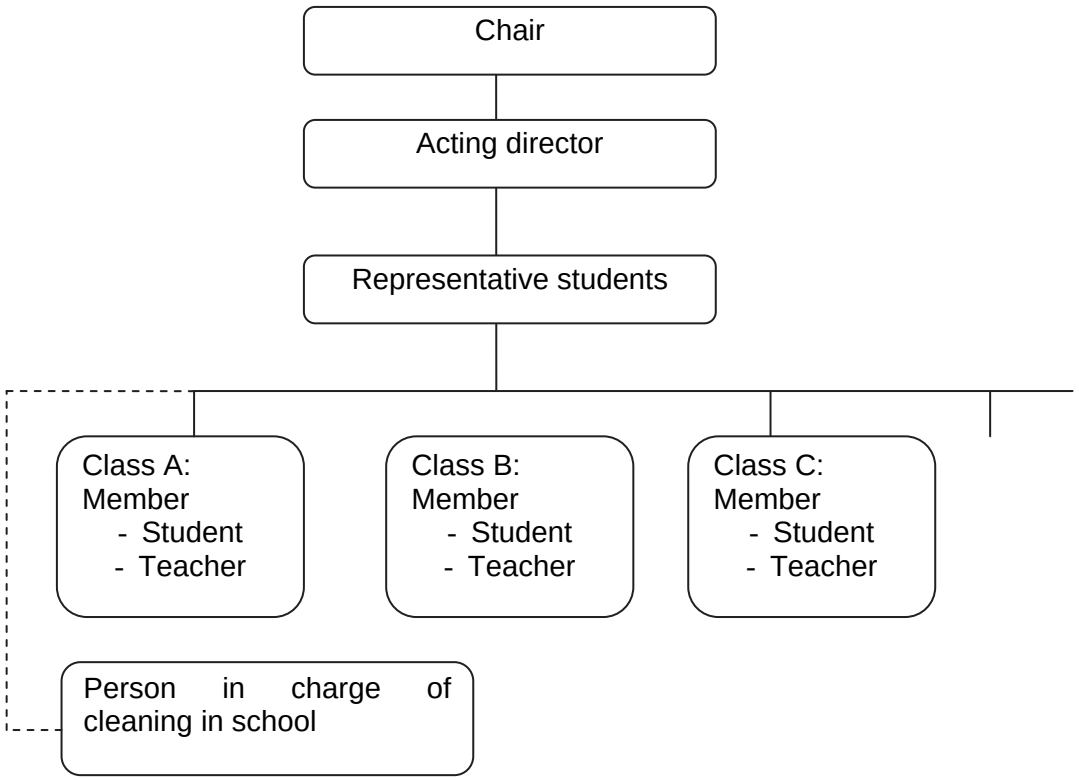


Figure E-3: Organization of 3R committee

c.3 Role assignment of committee member

Table E-4: Committee members and role assignments

Committee member	Role assignment
Chair	Coordination and Arrangement among recycling company and ADN as well as in the school
Acting director	Coordination and Arrangement among recycling company and ADN as well as in the school
Representative students	The results of all classes participated the PP will be announced to every students periodically like once a month.
Member	
Students	It is inspected that other than the recycling paper is not mixed the recycling box installed the classroom every day. The collected recycling papers in the recycling box are carried into the storage fixed day of the day and time. The weigh is measured and recorded by each shift at the storage place. The result is informed to the each class.
Teachers	To support their class's student delegated as a committee member to implement monitoring of PP
Person in charge of cleaning in school	Maintenance of recycling paper stored the storage place To support committee members to measure the weight of recycling paper

c.4 Others

- Preparation of monitoring sheet and stationery

d Recycling box for recycling paper installed in each classes

- The place install the container for recycling paper: each class/ set up some station in the school
- Point of view to decide are;
  - ✓ To recognize the result by students themselves
  - ✓ To recognize the practice as a their own behaviors
  - ✓ To make easy management by school
- Type of recycling container and capacity: Cardboard/box/ Recycling box/ Cardboard box illustrated by students
- Supplier of containers: ADN/ JICA

e Collection method of recycling paper

Recycling paper generated at home is targeted as well as recycling paper generated in school. The students bring as following method;

- Frequency: any time they want to come to bring/ once a week at a specific day
- Container and/or method bringing it from home: shopping bags/ tie it with the string

f Management of recycling paper stored in storage place

The recycling paper collected in each classes is collected and managed in storage place in school. The management methods are follows;

- Frequency of collection: once a week
- The recycled paper is taken to the storage site by the member appointed in each class.
- Committee member from janitorial staff helps to weigh the materials in the storage place.
- Type and capacity of storage container
- Installed place of storage facility in the school
- Manage of storage place: Person in charge of cleaning in school

g Collection of recycling paper stored at storage place

Recycled stored paper is collected once a week by recycling company.

- Frequency

E.7.2 Program on awareness raising for 3R promotion

a Making awareness materials

Materials for awareness raising of 3R promotion like Poster, Sticker, Magnet and Brochure were produced.

Table E-5: Materials for awareness raising of 3R promotion and purpose to use

No	Item	Quantity	Description
1	Poster	500	To be distributed to educational institutions, sport clubs, workshops, seminars, and JV of PP areas. The poster illustrates the students on the meaning of the following actions: Reduce, Reuse and Recycle.
2	Sticker	2000	To be distributed to students of Liceo Victor Garrido School located in INVI (Honduras del Oeste) and other educational

No	Item	Quantity	Description
			institutions of PP areas.
3	Magnet	1000	To be distributed in workshops to students and student parents.
4	Brochure	2000	To be distributed to educational institutions, workshops, seminars and JV of PP areas. The brochure besides informing the readers on the meanings of 3Rs explains the methods of developing the 3 actions and benefits of applying the 3Rs.

A poster is useful to provide information during lectures, meetings, workshops and conferences. It should be a summary with of the main points of the informative message, which must describe the key points of 3Rs application. It should also contain data to provide more information to the students and the public. It is a relatively simple method that can reach a large number of people.

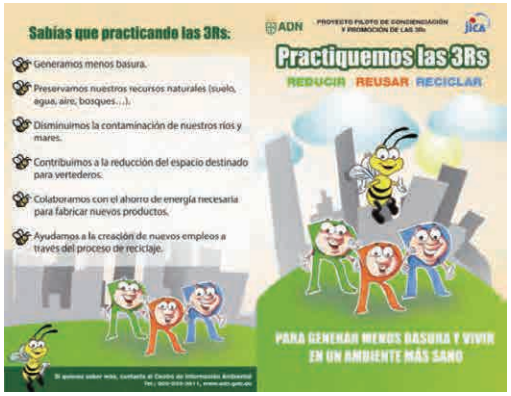
Considering that above, there were produced 500 posters which design is shown at right.

It is an adhesive with prints on paper or vinyl to be fixed on smooth surfaces such as folder or personal items. The stickers contain the message of 3Rs practices for students. It was produced for distribution in schools of the PP areas. Considering the durability has been produced in vinyl material with dimensions similar to the magnets (10cm x 10cm).

There were also magnets with the same message to be distributed at workshops to students and parents.

The brochure contains basic information on general notions about the introduction of 3Rs in promoting and implementing the 3Rs program by DIGAUE.

This brochure, as well as inform, foster awareness to students and the public about the benefits of applying the 3Rs.



b The progress of main meeting and discussion with school etc.

Date, important meetings, contacts, and development of works with the school are shown in Table E-6.

Table E-6: The date and minutes for main meetings with school

Date	Attendance	Contents of meeting
Nov. 10, 2010	Director DIGAUE C/P JET	➢ First meeting ➢ Explain the object and outline of 3R-PP ➢ Require the cooperation
Nov. 25, 2010	Director, person in charge DIGAUE C/P JET	➢ Explain and discuss on draft basic system of 3R-PP ➢ Primary school was selected as a target. ➢ Discussion ✓ It is necessary to discuss about establishment of 3R committee within the school. ✓ The followings proposals were requested to school; ✓ Organization of 3R Committee used existing one ✓ Collection and management system for recycling paper in the school; ✓ Discuss about containers installed each classroom and storage containers
Dec. 10, 2010	Ana Pou, PP Coordinator del PP Maria García, Director Víctor Garrido Puello School	➢ It was established the members of 3R PP which have as main task the inspection of good condition of material and containers in the classroom. ➢ The listing of committee members was provided who will participate in the conscious awareness workshops. ➢ These students will spread the information received in the workshop to the rest of the school.

c Workshop to train teachers, students, administrative personnel, and janitorial personnel who participate in the PP

Three (3) workshops were conducted in the school, one (1) was for teachers and two (2) were for students, the content was basically the same; however, teachers were trained to spread the information which is given in the workshop whereas for students the workshop was focused on training how to handle the material which get into their hands, how to apply the 3Rs (students can also show more ingenuity on how to reuse them).

Table E-7: Workshop Content

Topic	Content
Waste origin	How wastes are generated, how they are related to common people, collection and final disposal processes.
3Rs	**Basic Concepts:** **Reduce**: How we could reduce waste generation and how to dispose them correctly. **Reuse**: Of the articles we purchase, there are some which can be reused; it has to be remembered that many times what is considered waste; others see it as a valuable object. **Recycle**: Basically, to identify which materials can be reused and what can be done to improve work quality of persons who collect recyclables through separation at the source.
Environmental Education	To raise conscious awareness about all environmental problems this can be prevented through the application of simple techniques, e.g., separation at the source.
Green Love (associate company to the Project.	Explain what this company is about and how it will develop its work jointly with the school.

E.7.3 Monitoring System

The PP monitoring system was conducted daily on working days; during the first two weeks, it was conducted by ADN staff with the cooperation of recycling committee for two shifts (morning and afternoon); the following two week, it was weighed by members of the recycling committee.

The week from the 14th to the 18th of February, students got use to the new project, the following week from the 21st to the 25th of February, monitoring fully began.

During this monitoring, material was weighed in each classroom and school offices twice day (morning and afternoon shift). This system was based on two type of information: one from the school and one from Green Love.

a Monitoring system by school and/or students and information system by ADN

In the school, a paper format for each classroom was used to register the weight of the empty container and after collection; additionally, this format was digitalized to manage information even better. A sample of the format is shown as follows:

3R PP Monitoring Format

Liceo Víctor Garrido Puello School

Class

Shift → orning Afternoon

Monitoring Week	Date			Empty Weight	Weight	Net Weight	Signature
1	Monday	21	February	2K			
	Tuesday	22	February	2K			
	Wednestay	23	February	2K			
	Thursday	24	February	2K			
	Friday	25	February	2K			
2	Monday	28	February	2K			
	Tuesday	1	March	2K			
	Wednestay	2	March	2K			
	Thursday	3	March	2K			
	Friday	4	March	2K			
3	Monday	7	March	2K			
	Tuesday	8	March	2K			
	Wednestay	9	March	2K			
	Thursday	10	March	2K			
	Friday	11	March	2K			
4	Monday	14	March	2K			
	Tuesday	15	March	2K			
	Wednestay	16	March	2K			
	Thursday	17	March	2K			
	Friday	18	March	2K			

Figure E-4: Format of Monitoring for Weighing in Classroom

b Amount of recycled paper collected by Green Love which was informed to the school and ADN

For the case when the company associated to the project (Green Love) conducted the weighing, it was used a digital format which made it easier to manage data obtained and to conduct monitoring system that was used to evaluate amount weighed in the school. Green Love

charges a fee for weighing to the companies which request it; consequently, such activity was done only the first four weeks.

3R Pilot Project Monitoring Format

Green Love

Monitoring Week	Week	Newspaper Weight	Paper Weight	Cardboard Weight
1	Feb 21-25			
2	Feb 28 / Mar 4			
3	Mar 07-11			
4	Mar 14-18			

Figure E-5: Monitoring Format for Weighing by Green Love

c Weighing System by ADN

After the first four weeks of this project, weighing was conducted once a week by ADN directly. A paper and digital format as shown in the following figure was kept:

3R Pilot Project Monitoring Format

Ayuntamiento del Distrito Nacional (ADN)

General Bureau for Urban Cleansing and Equipment (DIGAUE)

Monitoring Week	Week	Newspaper Weight	Paper Weight	Cardboard Weight
1	Feb 21-25	Green Love	Green Love	Green Love
2	Feb 28 / Mar 4	Green Love	Green Love	Green Love
3	Mar 07-11	Green Love	Green Love	Green Love
4	Mar 14-18	Green Love	Green Love	Green Love
5	Mar 21-25			
6	Mar 28 / Apr 1			
7	Apr 04-08			
8	Apr 11-15			
9	Apr 18-22			
10	Apr 25-29			
11	May 02-06			
12	May 09-13			
13	May 16-20			
14	May 23-27			
15	May 30 / Jun 03			
16	Jun 06-10			
17	Jun 13-17			
18	Jun 20-24			
19	Jun 27 / Jul 01			

Figure E-6: Monitoring Format for Weighing by ADN

The administrative offices weighed once a day in the afternoon and used a format similar to the one used by schools.

d Feedback system of those results to students

At the end of each month a progress report was submitted which included the weight by week and tendency as the project evolves.

For the case of the first weeks of the project, the information included weight by classroom, by shift, by day, by week, by month, and tendency.

E.8 Results and evaluation of 3R Promotion Pilot Project

For the Pilot Project the following actions were implemented:

- Three (3) workshops for the promotion of 3R in educational centers.
- Educational material for 3Rs was distributed (poster, magnets, brochure, and sticker).
- Containers were distributed in the school.
- It was established an internal and external collection logistic,
- A frequent monitoring of the pilot project was conducted (amount of paper collected, by shift and type, general comments).

The comments and evaluation of this project were reflected in CPR´s Progress Report IV.

Table E-8: Monitoring Table for Week from 21st to 25th of February, 2011

Monitoring for 3R Pilot Project in Víctor Garrido Puello School
Monday 21/02/2011 Weighing was not conducted because the balance was not calibrated and precision was not adequate to record weight difference at the end of each shift. It was decided to weigh the complete amount per shift the following day.
Tuesday 22/02/2011 Weighing could not be performed; there were not classes.
Wednesday 23/02/2011 Morning Shift Initial Time: 12:00 P.M Final Time: 12:40 P.M *Weight: 12 pounds *This weight included generation from 21/02/2011 Afternoon Shift Initial Time: 4:00 P.M Final Time: 4:35 P.M *Weight: 20 pounds *This weight included generation from 21/02/2011 for containers in the administrative area.
Thursday 24/02/2011 Morning Shift Initial Time: 12:00 P.M Final Time: 12:40 P.M Weight (paper): 3 pound Weight (newspaper): 20.5 pounds Total weight: 23.5 pounds

Monitoring for 3R Pilot Project in Víctor Garrido Puello School
Afternoon Shift Initial Time: 4:20 P.M Final Time: 4:55 P.M Weight (paper): 8 pounds Weight (newspaper): 10.5 pounds Total weight: 18.5lb
Friday 25/02/2011 There were not classes; no weighing was conducted Green Love truck collected amount generated at about 9:00 A.M

E.9 Recycled Paper in ADN

A paper separation project called "reciclADN" has been taken place inside ADN municipal building.

The concept originates as part of the expansion of a project conducted by DIGAUE since 2010 until now; the recycled material is collected every two weeks by Green Love Company. This project, in addition, educates and spread the message about the importance to recycle in our daily life and as part of our daily regular office hours among all employees of this entity; it also serves as an example to other government organizations and private companies.

The Center for the Promotion of Recycling (CPR) in DIGAUE has been working for approximately two years with Green Love Company; conducting talks, workshops, and paper separation projects, as well as making field trips with students and part of CPR technical staff to industries which are in charge of collecting, processing, recycling, and commercializing paper, cardboard, and newspaper.

In March 2012, the executive director of Green Love, Mrs. Lorna Aquino, donated to the institution 40 folding cardboard boxes, similar to ballot box, as a contribution to the project to separate paper and newspaper inside ADN. Those boxes will be distributed in the different Department and Offices in ADN which voluntarily have joined this effort.

Similarly, in order to improve waste discharge in ADN, a design layout of a paper storage facility and solid waste was drawn. The drawing was submitted to the Direction of the building to evaluate whether construction of the facility is feasible or not.

Currently, five areas are participating in paper separation activity inside ADN. As mentioned previously, DIGAUE was the first Department to initiate this activity. In November 2011, the private company contracted for billing and collection (AAA Dominicana) joined the project.

In December 2011, Human Resources Department, which generates twice as much as DIGAUE, began to separate paper. Then in March 2012 Public Services Department and General Secretariat joined the project, the latter generates around half as much as DIGAUE. As a positive point, there should be noted that all these entities are still cooperating actively with the separation.

In late June 2012, twelve (12) other departments joined the project to raise the total number to eighteen (18) departments. The first collection of paper will take place by the middle of July

2012. In ADN, there are a total of 50 Departments which result in a coverage of 36% until July 2012.

In the following table, collection statistics for one year are shown (June 2011 to May 2012).

Table E-9: Paper Collection Inside ADN Premises

Item	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12
Papel (Kg)	58.65	58.65	58.65	58.65	58.65	117.30	234.60	234.60	234.60	322.58	322.58	322.58
Periódico (Kg)	42.27	42.27	42.27	42.27	42.27	42.27	42.27	42.27	42.27	42.27	42.27	42.27
Total	100.92	100.92	100.92	100.92	100.92	159.57	276.87	276.87	276.87	364.85	364.85	364.85

E.10 Pilot Project for 3Rs Promotion in VGP School

E.10.1 Summary

To introduce 3Rs, through the presentation of Reduce, Reuse and Recycle concepts, by establishing a pilot project of paper separation was the main objective of this project.
The implementation of the Pilot Project (PP) was sought to ensure that both school staff and students raise awareness through education programs and workshops, allowing them to learn on how to dispose of waste properly and the importance of preserving resources. Also, providing children with knowledge of the benefits that recycling provides to the environment.
The most important issue of this project is to maintain and replicate the level of environmental awareness generated in students.
The project includes the collection of newspapers and white paper generated at school or home, and place them in the containers provided for that purpose.

Plastic containers, donated by the Ayuntamiento del Distrito Nacional (ADN), were used to collect paper and were placed in administrative offices and in each of the 19 classrooms of then school, where students bring in newspapers and white paper from their homes.


Plastic containers donated by ADN


Containers to store newspapers and white paper at the collection point of VGP School.

Every day, the containers were emptied by the janitors into two large containers of 240 liters (one for newspapers and one for white paper), located at the collection point of the school. The school's janitor empties the containers into different bags and weighs them before the arrival of the intermediary collection company (Green Love) on Friday (usually between 7:30 and 8: 30 am).

Green Love transports the materials collected in the school to their collection center where a second classification is done and papers are transported to various recycling companies, such as Moldeados Dominicanos SA (MOLDOSA) which uses the paper to produce egg and cup cartons.

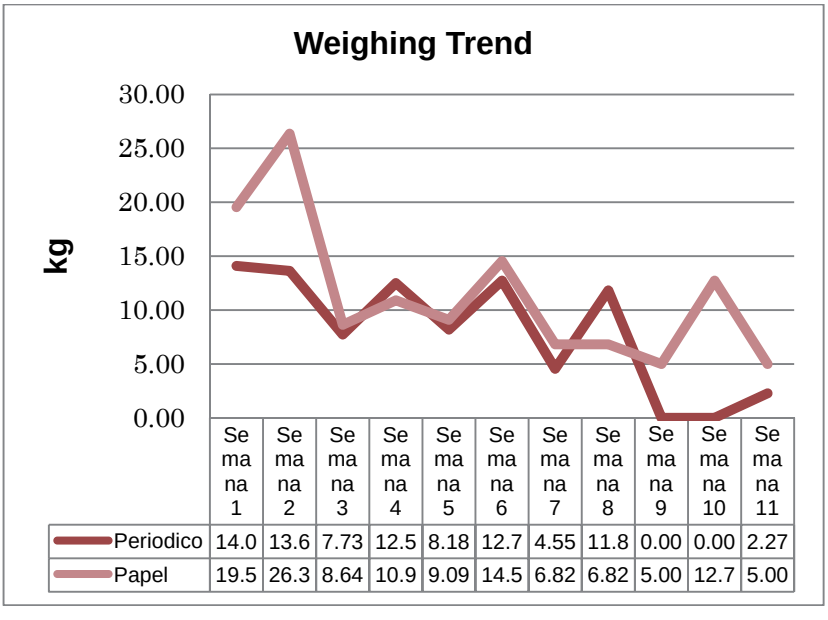
Before the start of PP training workshops were carried out by ADN staff for teachers and students, and members of the Recycling Committee of morning and afternoon shifts.

The stage for the selection of classes that participated in the PP included pre-primary and primary education of Victor Garrido Puello (VGP) School, who were best placed to implement the PP of the 3Rs. The target groups consist of a total of 700 and 600 students in morning and afternoon shifts respectively.

The table below shows the total number of students participating in the pilot project.

	Number of classrooms	Number of students	Remarks
Morning shift	19	700	30 – 40 Students/classroom
Afternoon shift	19	600	
Teachers	Total 63 teachers		
Other rooms	Additional classrooms, administrative offices, library, photocopier, staff room and a medical room		

Since the start of PP in late February 2011 through May 2011 were collected a weekly average of approximately 11.4 Kg of newspaper 9.7 Kg of white paper. In the first and second week were observed amounts between 14.09 ~ 13.64 Kg (newspaper) and 19.55 ~ 26.36 Kg (white paper), which decreased gradually in late May. It was noted a decrease in the amount generated, because there were cleaning activity at school, where old books, used notebooks, telephone directories and other materials were discharged in the first weeks. Also, students were excited about the project, when it started and brought more materials, but this leveled later.



	Semana 1	Semana 2	Semana 3	Semana 4	Semana 5	Semana 6	Semana 7	Semana 8	Semana 9	Semana 10	Semana 11
Periodico	14.0	13.6	7.73	12.5	8.18	12.7	4.55	11.8	0.00	0.00	2.27
Papel	19.5	26.3	8.64	10.9	9.09	14.5	6.82	6.82	5.00	12.7	5.00

Figure E-7: Amount of newspaper and paper (in Kg) per week from late February 2011 through May 2011

Collected amounts of newspaper and white paper were not significant for the intermediary company (Green Love) and recycling companies. However, the diffusion of benefits to the

environment and the active participation of students to the PP has been very important and significant impact on the school.

E.10.2 Results of the Pilot Project

a Sustainability

At the beginning of the PP, the school was supported by ADN and received the contribution of containers to implement the project. The school asked for a possibility of an incentive to support the ongoing project. It is understood that the purpose of PP is to raise awareness without conditions, however, whether through recycling system ensures that the collected paper is returned to schools in the form of stationery supplies, there would be a further increase in support. Consequently, this project will continue to seek some form of incentive to encourage the participants and emphasize the activities of 3r promotion.

Promotional activities are vital for a project with student participation to succeed. Therefore, it is important to periodically announce the results of recycling activities through continuous monitoring.

Through the PP, ADN managed to change some habits of waste discharge by students, making them aware of the benefits of separating the waste paper from other waste and thus benefiting both the school and the environment in general.

To promote knowledge and separation in school, committee members, Parents Association, and teachers who had important participation were taken to a paper recycling facility called Moldeados Dominicanos S.A. (MOLDOSA) with the purpose to inform them about the paper recycling process and its final use.

As an important factor, we should mention that amount of paper to be recycled was overestimated; it was evident little use of supporting material by students which caused higher collection and transportation costs by the collection private company. However, it is positively evaluated environmental education received by students and experience obtained by CPR staff.

Consequently, it is assessed that sustainability was affected for the small amount of paper collected at the school, but it should be evaluated the possibility to integrate community and neighbors, and the school would be used as storage site for recyclable materials.

In the following table, amount and selling price of recyclable materials collected at the school are shown.

	Newspaper			Paper		
	Weight (Kg)	Price RD$		Weight (Kg)	Price RD$	
February	15.45	RD$	20.55	27.50	RD$	39.60
March	40.68	RD$	54.11	47.05	RD$	67.75
April	29.09	RD$	38.69	33.18	RD$	47.78
May	2.27	RD$	3.02	34.09	RD$	49.09
Total	21.88	RD$	116.38	35.45	RD$	204.22

b Lessons Learned

Before the PP for the promotion of 3Rs, the school didn't separate paper from other waste and it was mixed with other materials, missing the opportunity to reuse the resource. The project has

served to teach school children that the separation of the paper offers many possibilities. This learning has helped to increase in a short period of time the value of paper collected and its usefulness especially after the visit to Moldeados Dominicanos SA (MOLDOSA) plant, where the school authorities, teachers, students and members of the Association of Parents, Tutor and Friends were able to realize the importance of not throwing away resources that can be reused.

Among the lessons learned are:

- The paper collection is a complex activity: the sooner you separate the paper, the more resources that can be generated.
- At the beginning of this school experience, all teachers and students reacted favorably. The key factor that has so far prevented the collection of paper was the lack of an organized structure to ensure that the collected paper ends up being recycled or put to use. After the visit by students to MOLDOSA plant, all positively understood that the papers collected by them are converted into new usable products instead of becoming garbage.
- During the visit to MOLDOSA plant, all participants of VGP school expressed the importance of recycling and that the visit has been very interesting, educational and enriching experience for students, including teachers, administrators and members of the Association of Parents, Tutors and Friends of VGP school.
- It is important to keep close contact with the school in order to receive timely feedback and information related to the work in the school. Important factor for success in these types of projects depend upon adequate follow-up of them.
- After school vacations, VGP school continued the project; however, after many weeks, collection stopped because the school was not very willing to manage waste discharge and the small amount of waste generated at the school.
- To implement this project, each one of the main actors should abide to what is established by Law 64-00 which defines that the Ministry of Environment and Natural Resources should be the regulator regarding solid waste; whereas municipalities should operate the collection, treatment, transportation, and final disposal systems following existing official regulations. Regarding, specifically the 3Rs, law 64-00 establishes that Ministry of Environment is responsible to promote waste recycling and reuse processes. An active participation of all actors within the framework of Law 64-00 would allow, for example, establishing tax incentives by both the central and municipal levels to those who take part in 3Rs activities.

E.11 Expansion of the Pilot Project to other Schools

The PP for the promotion of 3Rs launched in February 2011 and the policy for this expansion plan will be developed in other schools based on monitoring results of PP of paper recycling activities by the school after the school holidays and the start of new academic year (after mid-August 2011), this time without the constant support of the ADN.

It is estimated that the basic work structure for the PP is adequate for expansion to other schools; however, to maintain a constant contact with the school would make sure the project is effective and sustainable; even without constant support by ADN.

Furthermore, a possible participation of other intermediary companies which are interested in this type of projects and the possibility to conduct an effective collection at the necessary scale should be welcome in order to have more diversity.

The training for teachers and workshops on recycling with students can also be performed in a similar way, and may be incorporate into the school curriculum and learning activities for the protection of the environment.

This experience is important because it is naturally disseminated by students. At first, the process takes place in schools, where children bring their paper waste. Then families could begin to do so, then later their neighbors may bring their used paper, and finally companies may become involved that will donate products they recycled as an incentive for participation. This can lead to a project to achieve a balance between paper collected and redistributed supplies, as well as its economic sustainability.

However, previously mentioned conditions will take place when recyclable waste commercialization becomes economically profitable; currently, prices might be low and cost-benefit margin might be small for companies which conduct such activity at small scale.

In this sense, for the expansion of the project, other companies dedicated to collection of small amounts of recyclable materials have not been found; consequently, we will continue working with Green Love. DIGAUE and Green Love have agreed to expand the project according to Green Love´s current operational capacity; expansion plan would consider ten (10) schools every new school year, following the table below.

This time, ADN is working with Coca Cola Company, not only Green Love, which will donate to schools materials such as structural pieces according to their needs.

	2012																							
	Jul. (7)				Aug. (8)				Sep. (9)				Oct. (10)				Nov. (11)				Dec. (12)			
1) Preparation																								
Contact the interested party																								
Meeting to Explain Activities to be conducted																								
Planning activities to begin training																								
2) Implementation																								
Distribution of flyers																								
Workshop about Environmental Education and 3Rs																								
Beginning of separation																								
3) Monitoring																								
Adequate distribution of materials																								
Weighing of material																								
4) Evaluation and feedback																								
What to improve																								
Workshop to inform about achievements																								
5) Expansion																								

E.12 Recommendations

In the final evaluation workshop held on May 31 at VGP, school authorities and teachers expressed emphatically to follow up the pilot project of paper recycling after the school holidays and the beginning of next academic year by the school itself. However, for the safe follow-up of the project, it was suggested that initially ADN provide additional support at the start of the new academic year in mid-August 2011.

Technically, the implementation of the PP had some difficulties because of lack of intermediary companies to collect paper (high transport rates from the school to collection centers or recycling plant). Therefore, for the expansion of PP it is recommended to find the sponsorship of major recycling companies and local newspapers, as well as some institutions that might be

interested in participating in such projects to obtain incentives for participating schools, such as school stationery supplies (notebooks, notes, calendars, etc.) through recycled paper or other products useful to schools that serve as a stimulus and sustain the project.

For this reason, it is necessary to have an updated list or directory of recycling companies and intermediary recycling companies with company information and data: name, address, telephone number, contact person, category and characteristics of the company, plant scale, category of production, and so on for future plans or project expansion.

With regard to the promotion of the 3Rs, it was mentioned that promotional activities are key to project success with student participation. It is therefore important to periodically announce the results of recycling activities through continuous monitoring or environmental activities.

To establish an incentive system is essential to attain the purpose of sustainability of projects which is an element that we are including with the participation of Coca Cola in the project. Similarly, strengthening of schools after breaks is basic because during that period activities are reduced.

An important factor is the janitorial staff in the school who should feel involved and motivated to work in the project because they will work directly with collection staff of Green Love.

F Pilot Project of Pruning Waste Management

F.1 Background for Pruning Waste Management Plan

F.1.1 Existing Situation at the Beginning of the Project

The city of Santo Domingo de Guzmán, National District, is a city with a high green component in their areas; consequently, pruning residues are always present in the daily collection activities of this municipality.

Prune waste comes from the following sources:

- Maintenance of parks, green areas and other public spaces by the General Directorate of Environmental Management
- Branches cut for protection of power lines by the contractor of the Dominican Corporation of State Electrical Companies (CDEEE).
- Pruning made in and around the gardens of houses, institutions, offices, industries, commercials by the citizens and/or entities

Below is the flow of those wastes at the beginning of the Project:

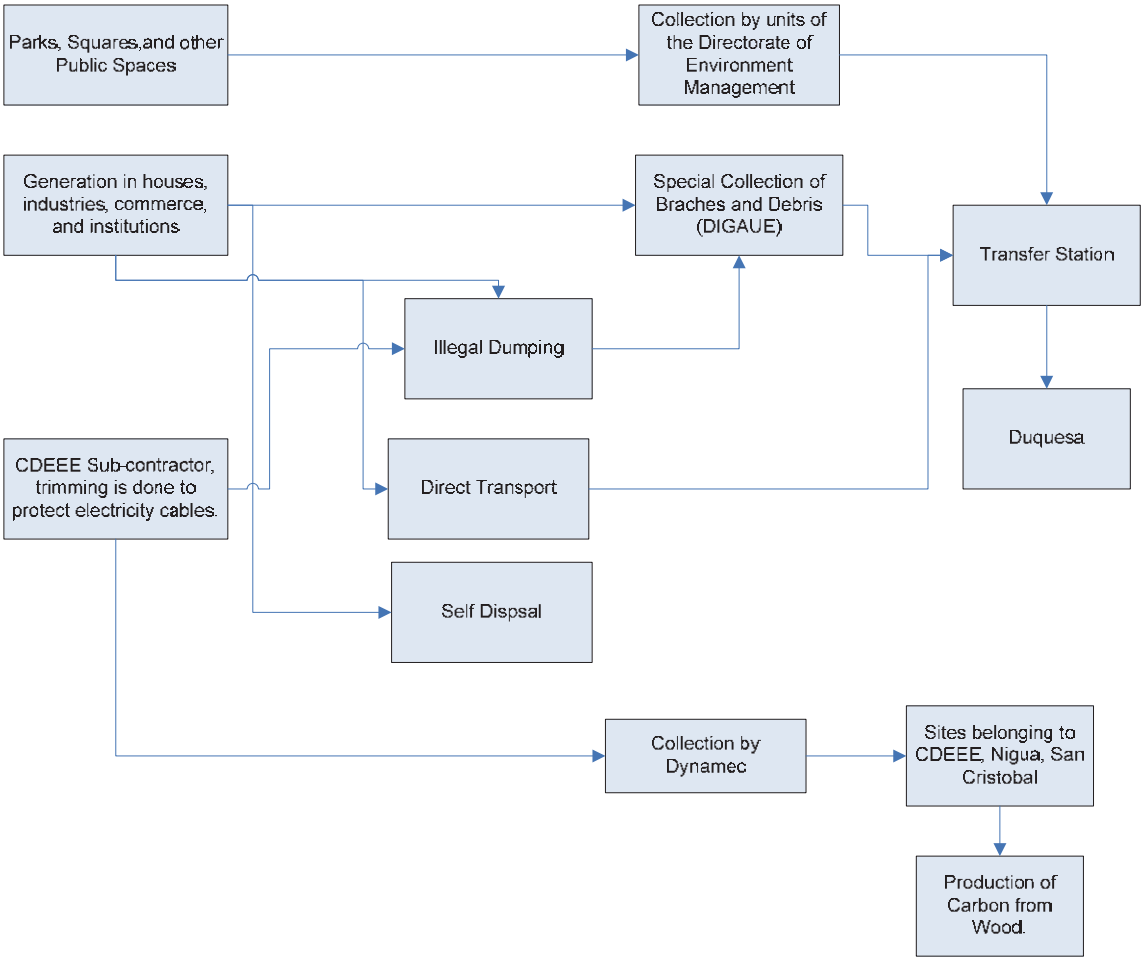


Figure F-1: Pruning Waste Stream

Much of these wastes were dumped illegally by the bottom two generators presented in the above flow, and they had to be handled by the vehicles of this municipality.

Once collected, these wastes were taken to the Transfer Station located in Villas Agrícolas, then transported by larger vehicles.

It is estimated that 2% (about 18 tons) of the total amount of waste that was discharged was merely pruning waste, although a small part comes mixed with other waste.

Problems related to pruning waste management were:

- Inefficiencies in the collection and transportation due to the bulky characteristics of these residues.
- It increased the loading time of the dump trucks at transfer stations, which contributes to the expansion of the process and can lead to queues.
- Low density of wastes in vehicles for collection and transport.

The points presented above increased the collection, transportation and transfer costs of waste.

F.1.2 Pruning Waste in Hurricane Season

The hurricane season officially begins in the Caribbean in June and ends in 30 November, each year covering a period of six months of activity. A large number of storms is formed which may become cyclones, hurricanes and others that do not reach that category.

In the hurricane season pruning waste discharged by citizens is greatly increased, because people, in order to prevent damage, cut and prune the trees that can be affected by any natural phenomena that comes along. Another factor is that it increases the rainfall amount and tree growth is accelerated; consequently, trimming is conducted more frequently by the citizens and businesses cut trees to protect power lines.

In addition, trees and branches which fall due to strong winds caused by natural phenomena produce urgent needs in the collection system, forcing the ADN to use their units for the rapid removal of these bulky waste that usually obstruct streets, sidewalks and other public spaces. These activities of pruning waste collection and transportation become very expensive.

F.1.3 Plan Santo Domingo Verde

The Santo Domingo Green Plan (Plan Santo Domingo Verde) is one of the main executive arms of the Management of Environmental Quality Department, which is the first Guideline of our Strategic Plan.

Being aware of the importance of trees in maintaining and improving environmental quality by virtue of their production of oxygen, regulation of temperature, and water conservation, as well as improving the view of the city, the National District City Council is committed to promoting the planting of trees using the legislation as a basic principle of urban trees, which was scientifically designed to provide an adequate green heritage.

For these reasons, the number of most beneficial species to the nature of our country has increased, favoring planting endemic species, some of them were threatened with extinction due to the thoughtless action of planting inappropriate foreign species or misplaced and likely to produce cracks of sidewalks, curbs and homes as well as to bend easily under the strong winds produced by climatic phenomena characteristic of our tropical climate.

This plan is intended to establish a strong green structure in the National District, which is sustainable in the long-term, balanced in its composition and distribution, resistant to environmental conditions and urban environment.

a Specific Objectives

- Increase the number of trees in public spaces of the National District.
- Establish tree areas composed of species suited to the environmental conditions of the city.
- Establish a system composed of green corridors interconnected with the big green parks, the sea coast and the river banks and streams.
- Provide guidelines to establish a unified and orderly image of the avenues.
- Guide and control the planting carried out by particular persons on public sidewalks.
- Educate the public about the benefits and management of trees.
- Investigate the behavior of different tree species in urban areas.

b Regulations for the National District Urban Trees

This standard establishes the technical and regulatory framework to regulate the work of planting, pruning and falling of tree specimens in public, in compliance with the powers conferred by the Municipal Organization Act 3456-52 on the National District and in harmony with the Law 64-00 on Environment and Natural Resources.

To search for increasing environmental awareness among the population regarding the proper treatment to be given to these species and associated biodiversity is one of the main objectives of this legislation, as well as to implement the environmentally responsible and sustainable urban tree management.

This legislation is part of the municipal environmental policy for urban trees in the territory of the National District and is framed within the initiatives outlined in the Strategic Plan of the City of Santo Domingo de Guzman.

c Appropriate and inappropriate Species

c.1 Appropriate Species

They are species allowed by the existing regulation of trees, defined as those species with morphological and environmental characteristics are easily adapted to different environmental conditions and space without creating a risk of physical and economic damage. It will be promoted species with ethno-cultural values, such as Guayuyo, La Ceiba, the Yagrumo, Guayiga, etc.

c.1.1 Some species indicated for public roads use

Caoba
Almacigo
Arrayan
Guayacan
Penda
Caymoni
Ceiba
Guayiga
Mara
Frijolito
Uva de Sierra
Avellano Criollo
Roblillo
Guayuyo
Yagrumo

c.1.2 Inappropriate Species

These are prohibited in the existing rules on urban trees and are invasive or natural species that represent risk or harm to human or animal health, and urban infrastructure and real estate property.

c.1.3 Some species that cause damages

Acacia Amarilla	Casuarina
Chacha	Leucaena
Nin	Melina

c.1.4 Substitution of Tree Species as Pruning Wastes Preventive Management

It is relevant that the replacement of inappropriate species by species that grows up and develops in harmony with the environment where they are planted for the following reasons.

- Because these plants are introduced, their ability to generate habitat and food for native wildlife is scarce.
- The Nin, Chacha, Leucaena and Casuarina (higher percentage of trees in the DN) has become pests and threaten reproduction of native species.
- Many of these trees have short-lives; currently, they are in the stage of decline, causing the leaf area reduction and, therefore, are less able to generate any environmental benefit.
- The aesthetic value of trees in decline is low or nonexistent.
- They are trees for reforestation, with well developed roots causing enormous damage to infrastructure (sidewalks, curbs, roads).
- In many cases, as they grow extremely high they affect power lines, forcing the electric distribution companies to prune constantly, and they often leave trees pruned illegally in public spaces.
- These are species that do not stand well against winds in the hurricane season, so the risk of causing damage and falling down are high in this period.

d Estimation of Inappropriate Species in National District

According to the latest survey by ADN in the Framework of Plan Santo Domingo Verde, it is estimated that 80% of the city's public trees consists of the following species: Acacia Amarilla, Chacha, Nin, Casuarina, Leucaena and Gmelina, all of these trees are prohibited by the Urban Trees Regulation.

e Possibility to utilize trees removed by the replacement of species as raw material in the biomass business

Several projects to utilize biomass as fuel are being developed in the Dominican Republic, so the large number of trees replaced (80% of the tree population in the DN) would have a potential market to be exploited as raw material.

It is important to mention that the large amount produced from such substitution might be beyond the shredding capacity of the current pilot project developed by the Dominican counterpart and the Japanese Expert Team. In this sense, it would be very important to examine the destination of those trees, to avoid transported to the transfer station and then Duquesa landfill, and thus reducing the costs associated with the collection and transport.

F.2 Examination of Pilot Project for Pruning Waste Management

F.2.1 Present stuation

a Collection Process

- Pre-classification of the material; the branches and trunks collected should have no more than 10 cm in diameter.
- The branches and trunks that exceed the desired thickness should be separated and a collection unit should be assigned to collect them.
- The material shall be weighed at the transfer station before being crushed to keep a record of the amount being processed.

b Disposal of discarded material

Those Branches which exceed the maximum thickness could be used as biomass for energy production. Additionally, these branches could be used as wood or their diameter reduced to be used as material suitable for grinding.

c Lean season pruning

During Lean Season Pruning, there is an opportunity to replace "undesirables" species in the National District with the purpose to prevent emergency situations due to atmospheric phenomena and to protect power lines from being affected by branches.
Wastes generated as a result of this activity would be used as material for composting.

F.2.2 Examination of Candidate Sites for Grinding of Pruning

a Scenarios

Following is scenarios of grinding and its candidate site.

Scenario 1: Grinding and treatment in Mirador Sur Park
Scenario 2: Grinding: Transfer Station, Treatment: Mirador Sur Park
Scenario 3: Grinding: Mirador Sur Park, Treatment: Duquesa Landfill
Scenario 4: Grinding: Mobile during collection, Treatment: Mirador Sur Park
Scenario 5: Grinding: Mirador Sur Park, Treatment: Botanical Garden
Scenario 6: Grinding: Transfer Station, Treatment: Duquesa Landfill Site
Scenario 7: Grinding: Mobile during collection, Treatment: Duquesa Landfill Site

Table F-1: Matrix of candidate sites

Place	Grinding	Treatment	Infrastructure
Mirador Sur Park	Advantages: It has an excellent location to transport and crush branches. The branches generated in the park would be crushed on-site, reducing the cost of transport to the Transfer Station. Disadvantages: The noise produced by the operation of the grinder may affect park visitors and ecosystem elements that already exist there.		Advantages: Near to environmental information center Disadvantages: Poor Security
Transfer Station	Advantages: Most of the yard wastes reach this	There is no available space	Advantages: Security

Place	Grinding	Treatment	Infrastructure
	facility. There is a scale, where all units should be weighed. Disadvantages: Low space availability to store and crush branches. Operation of wheel loaders moving on the discharge platform, constant traffic of vehicles, and there is a line of trucks waiting during peak hours, among other elements, would prevent to conduct grinding on this site. The operation of the grinder could affect the development of normal activities in the Transfer Station.	to treat compost piles	Water and electricity service is available There is space for the administrative staff. The site is administered by the Cleansing Department
Duquesa Landfill	Advantages: There is adequate space to store and crush the branches for the pilot project and for the permanent future composting system. The noise and dust generated do not affect the environment. There is a scale to weigh the wastes. Disadvantages: The landfill is located 18 km away; consequently, all branches that have been classified to be carried to the pilot project, increase the costs of transport, because the trucks would have to go directly to Duquesa instead of the Transfer Station	Advantages: There is adequate space for storing and processing branches during the pilot project and for the permanent future composting system which includes the organic wastes from markets. Disadvantages: Problem in availability of water supply for irrigation product. Problems with transportation for the staff to develop the test for compost. It might encourage the presence of birds.	Advantages: Security Availability of space for construction of sheds or simple structure requested. Easy access to the download area of pruning. Disadvantages: There is no administrative control by the Cleansing department of the site.
Botanical Garden	Advantages: Availability of space for storage and grinding. Background in implementing similar projects. The process would not affect the community Disadvantages: Cost of transport for weighing would become high because it will have to be transported to the transfer station before grinding. Noise could affect the wildlife that inhabits the park.	Advantages: Enough Space. Availability of equipment (wheel loader) for the treatment. Availability of water for irrigation of the material.	Advantages: Easy access to collection, grinding, and treatment sites. There is an Administrative Office which is responsible for a similar project. Site is located nearby areas of yard waste generation. Location is frequently visited by several research centers. Disadvantages: No electrical service No direct control by the Cleansing Department of Parks management.
Mobile during Collection	Advantages: Material to be crushed should not be pre-classified. Efficiency in management and transportation of material. Roads are cleared quickly of branches. Grinding is done on site. There is a quick response to emergencies (Hurricanes, etc.)	—	—

Place	Grinding	Treatment	Infrastructure
	Disadvanages: Additional cost to transport the grinder. Vehicle transit is interrupted. Generation of noise and dust could affect the communities.		
Repair shop for the Equipment Department.	Advantages: There is space available for grinding and storage. It is close to the transfer station. Inside one of the major areas of waste pruning generation. Fuel supply is located in the storage area. Disadvantages: Noise and dust which is generated by grinding could affect the community.	There is no space availability to treat the piles of compost	Advantages: Security Electrical service. Administrative offices available Control of personnel. Site is directly controlled by the Cleansing Department.

F.2.3 Analysis of Basic Alternatives

There are two basic types of fermentation processes: one which is "aerobic" and another one "anaerobic." The following table shows a comparison between the two processes.

Characteristics	Aerobic Process	Anaerobic Process
Use of energy	Net consumer of energy	Net producer of energy
Final Product	Humus, CO2, H2O	Sludge, CO2, CH4
Volume reduction	Up to 50%	Up to 50%
Processing Time	Between 20 to 30 days	Between 20 to 40 days
Maturation time	Between 30 to 90 days	Between 30 to 90 days
Main Objective	Volume Reduction	Energy Production
Secondary Objective	Compost Production	Volume reduction, waste stabilization

Source: Integrated Solid Waste Management, McGraw-Hill

Taking into account that the composting pilot project has the purpose "to reduce the amount of waste which is finally disposed", the aerobic process was chosen to design this Project.

F.2.4 Analysis of the Technical Alternative Chosen

Aerobic fermentation can be done as follows: in piles, fermentation in static piles, or inside digestors. Even fermentation in piles can be further divided into piles with minimum technology and high performance piles. The following table shows a comparison between these fermentation methods.
The Project will be designed following the high performance method, taking into account that DIGAUE has the capacity, space, and required conditions to implement this method.

Table F-2: Comparison of Fermentation Methods

	Pile with minimum technology	High Performance Pile	Static Pile	Inside the Digester
Scheme	The concept of this method consists on making long piles (aprox. 3.5 m high and 7. M long) which are turned around	This system consists of piles with small cross sections, generally, between 1.5 to 2.0 meters of height	The system of aerated piles consists of an aeration screen or extraction pipe on which fine	This fermentation is done by a closed digestor. This system can be divided into two categories: piston type flow and dynamic

	Pile with minimum technology	High Performance Pile	Static Pile	Inside the Digester
	once a year by a wheel loader.	and between 4 and 5 meters wide. Piles dimensions depend on the type of equipment which will be used to turn around fermented waste. Waste should be turned around twice a week and temperature should remain at 55 centigrade degrees.	organic processed wastes are placed. The common height of these piles is between 2 to 2.5 meters. Generally, a layer of screened compost is placed on top of the lines recently created to control insolation and odors.	(agitation layer). In the first category, the proportion between the particles in the fermentation mass remains the same during the whole process, and the system operates under the principle first one in – first one out. In the dynamic system the material to be fermented is mixed mechanically during the process.
Odor	Probably bad odors are generated.	Generally, bad odors are generated when compost is turned around.	This effect can be controlled.	Odor problems are less than for the case of static piles and it can be controlled.
Decomposition Period	Between three to five years	Three to four weeks (fermentation) Three to four months (maturation)	Three to four weeks (fermentation) Three to four months (maturation)	One to two weeks (fermentation) Four to twelve weeks (maturation)
Required Space	Very Large	Large	Large	Small
Construction Cost	Very Cheap	Cheap	Med	High
O & M Cost	Very Cheap	Cheap	Medium	High

Source: Integrated Solid Waste Management, McGraw-Hill

F.3 Implementation of Pruning Waste Pilot Project

F.3.1 Process to initiate the Project

After designing the complete plan to initiate the project and procuring the equipment, the dealer in coordination with the CPR conducted a workshop to train the operators for pruning waste project. The training was conducted with a video that shows the adequate and safe operation of the equipment, in addition, to on-site training with the chipper.

F.3.2 Operation

A chipping machine BC 600XL was donated by the Japanese government within the framework of the project being implemented jointly with JICA; it is operated at a fixed site in Parque Mirador Sur and, occasionally, the machine is moved to other sites where pruning waste material is found inside that area.
In average, between 3 to 4 workers are assigned to the total operation. The assignment for this personnel are:

- Prepare the wood-chipping machine
- Operate the wood-chipping machine
- To classify and organize the pruning waste material
- To collect chipping material
- To clean the machine after finishing the operation
- To keep clean the operation area.

In addition to these personnel, there is a supervisor who is in charge of the project; his/her assignments are as follows:

- To organize the job
- To collect information regarding the operation (working hours, amount of material, gas consumption, general remarks).
- To coordinate machine maintenance.
- To transport the machine from the storage site to the operation site.
- To manage gas supply.

The operation is conducted in the morning between 8:00 a.m. and 12:00 p.m. Average operation time is two (2) hours.

F.3.3 Use of chipped material

It is estimated that 560 kgs of chipped material is produced each hour of operation. Chipped material is used for aesthetic purpose and for mulching in green areas of the National District.


La Arboleda Park, Naco

F.3.4 Maintenance

The machine is greased every 5 or 10 hours and spare parts are changed as it is shown in the manufacturer´s manual. The machine is also cleaned internally frequently and screws are tightened every time they become loose due to vibration.

F.3.5 Data Collection

After chipping has been finalized, piles of chipped material are collected in bags and weighed to define the amount of material that has been processed.

In addition to amount of chipped material, the following data are collected:

- Gas consumption
- Man-hour and machine-hour operated
- Maintenance activities

These variables are recorded in the data base and performance indicators are calculated, for example, Kg produced per hour, gas consumption per hour of operation.

F.4 Action Plan Pruning Waste Management

F.4.1 Organization

DIGAUE is in charge of municipal solid waste generated in the National District as well as compactor vehicles management which are property of ADN; additionally, DIGAUE is in charge of the Transfer Station for municipal solid waste.

DIGAUE has a special service for collection and transport of debris and pruning waste generated by citizens in the National District. For this special service, the client is charged a fee which is shown in the invoice bill that is issued monthly.

Due to high waste generation in the National District (ND), some measures have been implemented related to 3Rs with emphasis on waste minimization which reduces disposal in the Final Disposal Site. In order to achieve these measures, it has been planned to strengthen in four directions: 3R introduction, identification of recoverable materials in the Great Santo Domingo, paper separation, and pruning waste management.

In this regard, it was initiated the Pruning Waste Shredding Project in Mirador Sur Park with the assistance of JICA which donated equipment and provided technical advice.

F.4.2 Pruning Waste collection and transport

The collection system used before the beginning of Pruning Waste Chipping Pilot Project was as follows: pruning waste generated in the National District was collected by DIGAUE and Environmental Management Department (DGA); subsequently, it was transported to the Transfer Station (TS).

According to data generated in the Transfer Station ten (10) tons of pruning wastes are taken to the Transfer Station every day.

Currently, pruning waste transported by DGA which is generated as a result of maintenance of green areas are transported to Mirador Sur Park.

F.4.3 Discharge and Weighing

For the Chipping Project, all pruning waste collected by DGA, by their own vehicles or rental vehicles, are discharged in Mirador Sur Park to be chipped. It is important to emphasize that pruning waste generated in the park, by the maintenance crew or due to natural causes, are transported internally to the chipping area.

Currently, it is used an estimated figure to define chipped material, before and after chipping. At the beginning of the of the pilot project, machine performance was calculated based on the weight that can be chipped in one hour of operation and gas consumption per hour.

This estimated weighing is updated every four months with the purpose to keep an accurate figure.

F.4.4 Wood Chipping Work

Wood Chipping is done at the Mirador Sur Park in an area nearby Firefighter Station X-5 which operates in the park. Pruning material is collected in this place to be chipped subsequently.

Currently, only one chipping machine is used at a time. The operation is under the responsibility of Amancio Pereyra who works as supervisor, an assistant who separates and prepares pruning waste for the equipment capacity, and other assistant to operate the chipping equipment. Amancio Pereyra is part of DIGAUE whereas the assistants work under DGA and their work schedule is from 8:00 am to 12:00 noon.

Equipment maintenance is conducted for every operation day by Amancio Pereyra; this maintenance consists of greasing and cleaning; this activity lasts for no more than 30 minutes. Additionally, oil and gas levels are checked to ensure non-stop operation of the machine.

F.4.5 On-Site and Weighing Phase

On-site operations are conducted mostly in green areas or parks, through the request of Junta de Vecinos, Councilmen, Churches or DGA. In this case, material is used for brush control and soil cover to improve the site, because of the foregoing storage of material is necessary.

Transport to the chipping site and out of this is conducted by a vehicle assigned to the monitoring area in the sector where operation will take place.

Weighing is performed by means of an estimation following the method explained in the Discharge and Weighing item. Data generated are managed in Excel tables which are used by the operation supervisor to input information collected daily.

F.4.6 Development for the application of chipping material

According to weighing estimates, under actual conditions, it is being chipped an average of 1.5 tons per day. With two machines under operation, it is estimated a production between 3.0 and 3.5 tons per day.

With the procurement of a third chipping machine of more capacity, fixing of a fourth machine owned by DIGAUE, and a complete work shift by the personnel, it is estimated to reach a generation of 10.0 tons/day of chipped material.

Most of chipped material will be used for cover bare ground in Mirador Sur Park. Additionally, material can be used for compost experiments, soil conditioner, and biomass.

F.4.7 Each plan and/or perspectives

a Collection and transport plan for pruning waste

DGA	
Vehicles	7
Trip per Vehicles	1.5
Tons/trip	1

b Discharge and weighing plan

The discharge point is located in Mirador Sur Park nearby Firefighter Station X-5 that operates in the park.

To estimate pruning waste weight before chipping, average weight of loaded truck (around 1,038 kilograms) is used. This figure is multiplied by the number of trips to the chipping area.

Example:
1,038 kilograms x 7 trips = 7,266 kilograms

The estimated weight of material that is chipped is obtained by multiplying the performance of the equipment by the number of hour that operated.

Gasoline Equipment				
Performance		Hours		Weight
560 kg/h	X	4	=	2,240 kg

Diesel Equipment				
Performance		Hours		Weight
775 kg/h	X	4	=	3,100 kg

c Weight Data Management

c.1 Form A

ADN	Dirección General de Aseo Urbano y Equipos Centro para la Promoción del Reciclaje Formulario control de operación de la máquina trituradora	**Trituradora Gasolina**

Dia		Inicio Jornada		Fin Jornada		Mantenimiento	Observaciones
		Hora	Horometro Maquina	Hora	Horometro Maquina		
Jue	01						
Vie	02						
Sáb	03						

c.2 Form B

Dia	Inicio Jornada		Fin Jornada				Peso (kg)	Consumo Combustible (gls)	Engrase	Rendimiento Operación maquina (kg/hr)	Rendimiento Jornada * (kgs/hr)	Rendimiento Combustible Maquina (gls/hr)	Operarios	Comentarios
	Hora	Horometro Maquina	Hora	Horometro Maquina	Horas Trabajadas	Horas Maquina Trabajadas								
1					0:00:00	0.00	0.00	0		560		0.90		
2					0:00:00	0.00	0.00	0				0.90		
3					0:00:00	0.00	0.00	0				0.90		
4					0:00:00	0.00	0.00	0				0.90		
5					0:00:00	0.00	0.00	0				0.90		

Form A is used to record field data. Working hours and equipment engine hours meter are recorded. There is one form of this type for each equipment.

For weighing data management, we use Form B to record information obtained during the field work. With this data, weight is estimated by using the formula explained previously.

Comments column in the form can be used to highlight any particular event that takes place during the work shift.

F.4.8 Wood Chipping Work Plan

a Actual Work Program

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Day off	8:00 to 12:00	8:00 to 12:00	8:00 to 12:00	8:00 to 12:00	8:00 to 12:00	Day off

b Future Operational Work Program

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Day off	8:00 to 16:00	8:00 to 16:00	8:00 to 16:00	8:00 to 16:00	8:00 to 16:00	Day off

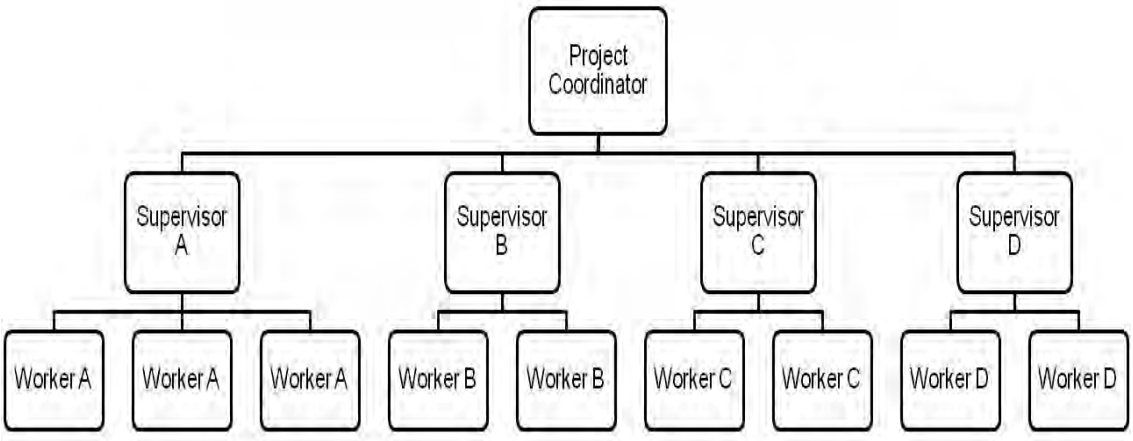
c Workers

The following table shows workers´ assignment per equipment.

Vermeer BC600XL	
Supervisor	1
Operator	2
Vermeer BC1000XL	
Supervisor	1
Operators	3
Gravely Gasoline	
Supervisor	1
Operators	2
Gravely 944	
Supervisor	1
Operators	2
Assistant	1
Total	14

*The person in charge of the project will also work as supervisor, in case it is necessary.

Currently, operators belong to DGA, but for a full capacity operation of equipments, DIGAUE will assign adequate numbers of operators.



Position	Responsibility
Project Coordinator	To elaborate weekly work plan To record data (weighing, time, etc.) To schedule equipment maintenance To coordinate chipping works with other interested institutions
Supervisor	To operate the equipment and make sure they are operated appropriately To coordinate works with other workers
Worker	To sort pruning waste according to branch´s diameter to chip them subsequently.

A supervisor will be in charge of the equipment operation; after the site for chipping waste has been defined, the responsible will be in charge to transport the equipment to the chipping site and its maintenance.

When the equipment has been transported and greased, the chipping process begins. The supervisor will be in charge to sort the branches by choosing branches with adequate diameter for the Chipper; he/she will also supervise chipper´s operation and will take care of its maintenance.

Parts procurement for preventive maintenance for the equipment will be coordinated with the dealer who sold them and maintenance will be conducted according to specifications from the dealer, depending on the operation hours of the equipment.

F.4.9 On-site and weighing phase plan

Operations on-site will be coordinated by the person in charge (Amancio Pereyra) who will define the chipping place, manner to transport the equipment, and use of chipped material.

Currently, the person in charge receives a request for chipping pruning waste at a specific place, subsequently, the site is inspected and it is defined if wood chipping is feasible. If it is favorable, the activity is scheduled and the equipment is transported on the day assigned.

The operation begins as usual, with a supervisor, two operators, and a work shift of four hours between 8:00 am and 12:00 pm.

After chipping operation is completed, the chipped material is not stored, but used on the same site as compost.

For operations at bigger scale, the following work schedule will be used; the person in charge will define where the equipment will be located.

Table F-3: Operation Program Example

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Equipment 1	Day off	Mirador sur	Site X	Maintenance	Mirador sur	Site X	Day off
Equipment 2	Day off	Mirador sur	Site Y	Damaged	Mirador sur	Site Y	Day off
Equipment 3	Day off	SiteX	Mirador sur	Mirador sur	Day off	Site Z	Day off
Equipment 4	Day off	Site Y	Site Z	Site X	Day off	Day off	Day off

Table F-4: Work schedule to achieve target goal

(Tons/day)

	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
BC600XL	1.01	1.05	1.1	1.2	1.5	1.8	1.7	1.65	2.1	2.3	2.5	2.5	2.5	2.6	2.7	2.7	2.7	2.8	2.9	3	3	3	3	3
BC1000XL	0	0	1.6	1.8	2.5	2.8	3	3.2	4	4.5	4.7	4.8	4.9	4.9	5	5.1	5.2	5.3	5.5	5.8	5.9	6	6	6
Gravely 944	0.24	0.5	0.7	0.6	0.8	0.4	0.5	0.65	1	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.8	0.8	0.9	1	1	1	1
Total	1.25	1.55	3.4	3.6	4.8	5	5.2	5.5	7.1	7.4	7.7	7.9	8	8.1	8.3	8.4	8.6	8.9	9.2	9.7	9.9	10	10	10

Note: These figures will be shown in more detail in next CPR report when there will be more accurate data from the new donated machine.

F.4.10 Development of application for chipped material

This distribution is for a total of 10 tons per day.

a Distribution of Chipped Material

Uses	Tons	% of 10 tons/day
Compost	0.5	5%
Brush control	4.5	45%
Biomass	0.5	5%
Soil cover for parks and green areas	4.5	45%
Total	10	100%

F.4.11 Method to Produce Compost

a Method used for turning the pile for the experiment to produce compost

a.1 Step 1:

Temperature is taken in the pile: at the top (T1), middle (T2), and bottom (T3); additionally, the pile is measured in its length, width, and height. To take the temperature, a digital thermometer is used. It should be noted that initially it was used a manual thermometer and we could observe that there is a difference of 3oC between the digital and the manual thermometer.

To measure the length, width, and height, a measuring tape and two plumb bobs were used. Two persons take part in the measurement and they are placed at both extremes of the pile; they proceed to measure and record the data in centimeters as it is shown next.

Taking temperature data in the pile

Take height of the pile

a.2 Step 2:

Before turning, marks will be placed on the ground which corresponds to the pile´s dimension, measured previously. With the use of measuring tape, on the new site for the pile, five marks are placed: four marks along the main axis of the ellipse and one mark in the center. Subsequently, the pile is turned with the use of shovels.

It is recommended to begin turning the material placed on the exterior because this material is not decomposed totally; turning should be done slowly and material should be dropped from some height to allow aeration. After the material has been turned on the new site, and the pile is structured again, we should verify its height at from the ground to the top.


Beginning of the new pile after turning


Turning the pile with the shovel

a.3 Step 3:

After the new pile has been structured, we proceed to take temperatures readings and the measurement mentioned previously. It can be observed that pile height might even be taller than the previous one; additionally, the new temperatures can be lower than those taken before turning; this is due to aeration produced during turning.


Taking temperatures after turning


Measurements of the pile after turning

Pile turning can be conducted every three (3) weeks in average, data was recorded from Monday to Friday, similarly, data is recorded for every turning in the data sheet with the purpose to obtain a general record and a graph which should indicate projections.

The stabilization of (at least) two of three temperature readings will define that it is about time for another turning.

When temperature stabilization takes place, it indicates us that there is a reduction in decomposing activity of the material by organism and, consequently, there is reduction of oxygen inside the pile. Currently, the experiment has been conducted for 24 weeks and 8 turnings of the pile have taken place.

b Method to define tons Produced in an hour with the chipping machine

1. Firstly, the time shown in the chipper´s hourmeter is registered. An hour of operation is completed in the hourmeter and clock.
2. Material produced during one hour is weighed using plastic bags, shovels, and a clock balance.
3. The balance is hung from a branch, then the bags are filled with chipped material one by one and their weight is recorded. After an adequate number of times weight has been recorded, then weighing is conducted through estimation; however, actual weighing is done randomly to confirm if estimation is realistic.

4. After all material produced during one hour of operation is weighed, all the amounts are added and chipped tonnage is obtained.

Material is produced and place in bags

Weighing to define production in kilograms

Method to define gas consumption for a chipping machine per hour of operation.

1. Gas tank is filled until it reads “Full.”
2. Chipping operation begins and hourmeter reading is recorded and also time of the day (clock) if possible.
3. After a period of time, using the time keeping devices as reference (for example, after one hour), a container (gallon) is used to fill the tank again until it reads “Full” the amount used to fill the tank is the consumption during chipper´s operation for the time period defined.

Meter when the Tank is full

Meter after operation

Completing gas to define gas consumption during operation

F.5 Statistics

Chipped Period Nov-2010 to May-2012

BC600XL																					
Month	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Total	ave/day	kg/gl
Weight (kg)	3,360.00	14,112.00	12,096.00	0.00	6,832.00	0.00	2,352.00	0.00	15,008.00	21,616.00	6,384.00	5,320.00	15,848.00	22,400.00	15,288.00	5,040.00	1,680.00	0.00	1,736.00	149,072.00	258.36	622.22
Gravely 944																						
Weight (kg)	-	-	-	-	-	-	2,352.00	0.00	0.00	14,802.50	18,180.50	16,856.00	8,990.00	0.00	4,805.00	28,210.00	18,910.00	6,765.75	18,367.50	138,239.25	715.24	775.00
BC1000XL																						
Weight (kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,000.00	15,000.00	27,000.00	41,700.00	89,700.00	747.50	1,500.00
Total																						
Weight (kg)	3,360.00	14,112.00	12,096.00	0.00	6,832.00	0.00	4,704.00	0.00	15,008.00	36,418.50	24,564.50	22,176.00	24,838.00	22,400.00	20,093.00	39,250.00	35,590.00	33,765.75	61,803.50	377,011.25	653.40	789.14

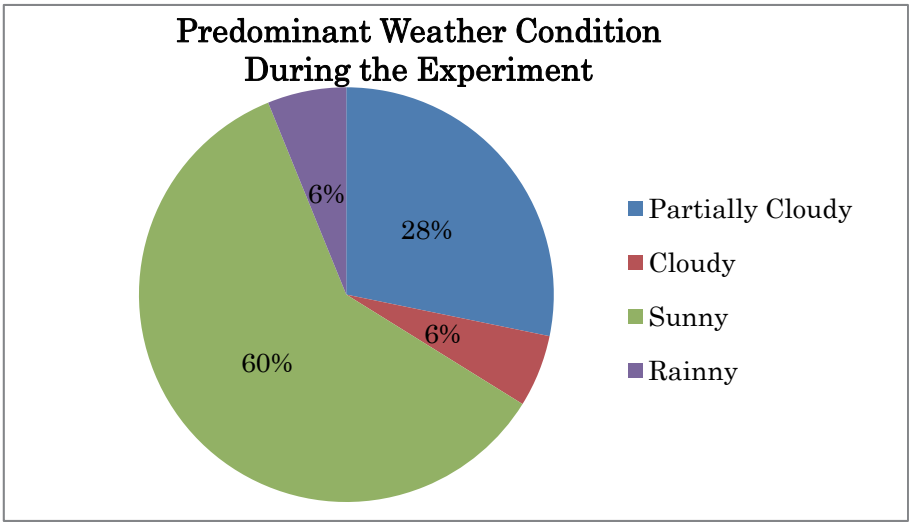
F.5.1 Composting

The experiment to produce compost began with the cooperation of Japanese experts. The place to conduct the experiment was selected as Mirador Sur Park where the pile could be observed every day and its shape can be controlled and, consequently it can be handle and managed more efficiently.

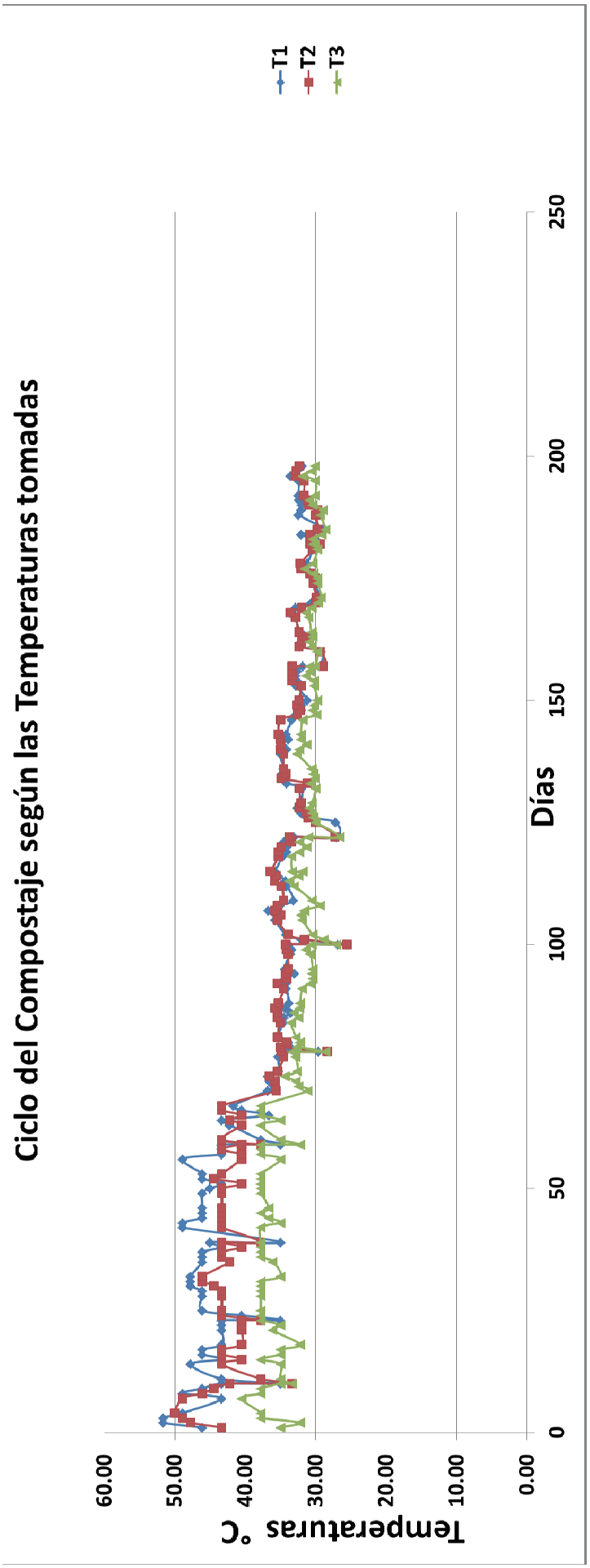
We proceeded to weight 191 kg of pruning waste chipped material. A pile was created to measure three temperatures T!, T2, and T3. T1 is the temperature measured at the top of the pile, T2 is the temperature measured 30 cm below T1, and T3 is the temperature measured 30 cm below T2. TA is air temperature; additionally, weather conditions are recorded which can be cloudy, partially cloudy, rainy, and sunny.

The experiment initiated on the 29th of September, 2011.
After the pile was constructed, the following measures were taken W1=196 cm, W2 =166 cm. H = 84 cm where W1 and W2 are the axis in the base of the pile and H is the height. Initially, temperature was measured with analog thermometers; subsequently, digital thermometers were used. There was a difference in reading for both thermometers by 4 Celsius degrees.

From 28th of November, 2012 temperature readings were done just in the digital thermometers. From 29th of September 2011 to 22nd of June this year, eleven (11) turns have been done on the pile for an average of 4 turns per month. Air temperature has remained approximately 31.22 Celsius degrees per day. Since the beginning of the experiment to produce compost, the dimension W1 has increased.



a Graph for Compost Cycle



b Design for the Following Phase of the Project

b.1 Expansion of the project for compost

The Expert Team has suggested expanding the compost project; this time, pruning waste chipped will be mixed with organic waste, preferably from market.

b.1.1 Materials to be used in the new pile

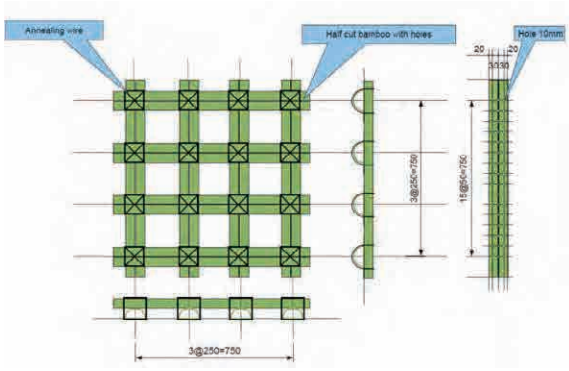
It has been defined to use 8 pieces of bamboo of 950 mm long; they will be tied four pieces perpendicular to other four pieces as it is shown in the following drawing. Separation between bamboos would be 250 mm. For aeration of the pile, bamboos will be drilled with holes at 30-50 mm from each one.

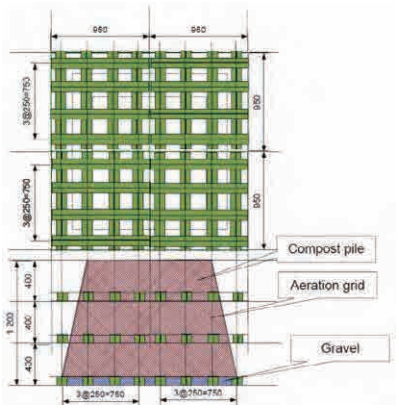
b.1.2 Structure

There will be platforms placed one on top of the other one. The first platform will be placed on the top of stones or wood, then a layer of 400 mm of material is placed on top of the platform (chipped material mixed with organic waste, preferably market). A second platform is placed on top of the layer of material and another layer of 400 mm is placed on top of the second platform. Then a third platform is placed and another layer of 400 mm is placed on top of it for a total height of 1,200 mm.

b.1.3 Remarks

As we implement the project, we will verify if it is necessary to place vertical structures to support the platforms to prevent the piles from collapsing.





b.2 Work schedule for Expansion of Compost Experiment

Activities	First Week Aug 2012	Second Week Aug 2012	Third Week Aug 2012
Construction of Platforms			
Collection and weighing of waste			
Construction of the pile			

We present the workschedule to begin the expansion of compost production experiment.

- The date chosen to begin these activities is the beginning of August.
- The first week, it is considered the procurement and construction of platforms.
- The second week will be dedicated to choose the market or business which will be the source of organic waste and weigh them to be used for compost production.
- In the third week, we will proceed to create the pile which should begin by placing a stone or wood layer; subsequently, a platform will be placed on top of it and a layer of 400 mm. Then a second platform will be placed and another layer of 400 mm.

Finally, a third platform will be placed and another layer of 400 mm on top of it for a total height of 1,200 mm.

F.6 Conclusions and Recommendations

F.6.1 General conclusions about pruning waste project

With the implementation of pruning waste project, 100 tons of pruning wastes have been produced due to replacement of non-native species in Joaquin Balaguer plaza which is next to Mirador Sur Park, and the Park itself. Consequently, more than 33 cubic meters of pruning waste have been cleaned and became available in the Park; if we estimate one ton of waste for every 3 cubic meters. Totally, during the project 377 tons have been chipped for an equivalent space of 126 cubic meters.

Additionally, the amount of pruning waste in the streets, avenues, and green areas has been reduced in the National District as it is mentioned in the statistics of this report. Jointly with the Department of Environmental Management, it was agreed that their vehicles discharge pruning waste in Mirador Sur Park which is generated as a result of removal of non-native species under the request from citizens.

We managed to move the operation outside Mirador Sur Park under the request of aldermen, neighborhood committee, and other institutions such as Autonomous University of Santo Domingo, School Hogar Santo Domingo Sabio and others.

We also managed to cover with mulch open areas such as Arboleda Park, Naco where we used 16 tons for a layer of 4 inches thick. The application of this material was done jointly with staff of Environmental Management Department.

We should emphasize that it is the first time the National District Municipality implement a Pruning Waste Management project as it is currently implemented (planning and work schedule, implementation as planned, data collection, expansion, etc.).

F.6.2 Recommendations about Pruning Waste Management

For the implementation of a Pruning waste project, a series of factors should be taken into account; for example, different type of scenarios for the location for wood chipping operation. Advantages and disadvantages should be mentioned such as easy access from the generation source.

When an analysis of scenarios is conducted, transportation cost minimization is sought; the site should have good access, have enough space, not to have too many persons or animals in the surrounding area, not to be too close to urban areas, preferably, surrounded by trees which can serve as buffer zone to prevent noise pollution.

After the site has been chosen, a field visit is conducted where pruning waste is generated and prevailing branch diameter is measured and defined; selection of adequate Chipping machine should take into account these findings. For example, if prevailing diameter defined is 10 inches diameter, then a machine with 12 inches diameter capacity should be procured.

Regarding the staff, we recommend that 3 persons should be employed per machine to attain the highest performance in the operation; if pruning waste is not classified then branches are too heavy, a fourth person with saw or machete can be employed to reduce size and weight in order to make it easier to handle.

Regarding personnel to be employed for operation, conditioning and introduction of pruning waste, it is recommended that they are trained in basic issues regarding the equipment such as gas tank, radiator, hydraulic oil deposit and engine, grease points, oil meter and others.

In order to train staff on how to turn on the equipment, use the clutch, start bar, stop bar, etc. it should be taken care with regards to standing to both sides of the platform or incoming tray when feeding the branches, specially the distance between the arms and the drum feeder.

Training should be provided on the use of safety equipment such as helmet and protective glasses, gloves, forbid the use of long sleeves shirt to prevent accidents, and use of noise protection head phones, use of steel toe boot, and corresponding uniform.

Useful gear: safety cones, saw or machete, shovels, rakes, balance, and plastic bags. Regarding daily maintenance for the equipment, the following should be checked/performed: external cleansing, oil level, greasing points, high temperature grease (500 degrees preferably), coolant level in the radiator, gas consumption, water level, tire pressure in order to verify that the machine can perform without problems.

Note: for our case, the gear is used to apply the chipped material on the site.

General maintenance of equipment as specified by the manufacturer is conducted in the Equipment Department and includes: oil and filter change (hydraulic and engine), replacement of blades, battery level, check belts, adjust belts, washing and greasing, among others.

F.7 Pictures

Pictures for Pruning Waste Project (Gravely)

Pruning Waste Site at Mirador Sur Park, personnel is chipping while they operate the Gravely machine.

Pictures during composting experiment

First tests to produce compost, piles were formed with material from shredding.

G Capacity Assessment

G.1 ADN-DIGAUE Capacity Assessment

The capacity assessment of the counterpart team involved in Solid Waste Management Planning was based on the items described in "Table 3-1. Capacity Assessment Content" in the Inception Report of the Project.

The assessment includes two steps:

A) A scoring evaluation, using the following criteria:
   5. It is possible to carry out an excellent job without the Japanese Expert support.
   4. It is possible to carry out a satisfactory job without the Japanese Expert support.
   3. A little help from the Japanese Expert is needed to reach the goal level.
   2. A lot of help from the Japanese Expert is needed to reach the goal level.
   1. It is impossible to carry out a satisfactory job, even after capacity development with the Japanese Expert.

B) Comments to support the score given and aspects to be developed in order to improve the capacity to the desired levels of 4 or 5 at the end of the project.

Table G-1 : ADN-DIGAUE Capacity Assessment

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
Basic information on ADN	Urban Planning	Is any of the following known? Urban planning, such as re-development plan, housing development, or traffic control plan that may affect waste management.	Yes. The sitting for waste disposal site must be included as one of the requirements for the approval of any new construction project. Regarding the traffic, it is included in the design of routes and frequencies. The possibility of waste collection at night hours was evaluated but, up to the present, it is not possible.	Level 3 Findings They confused urban development with locating a new waste disposal site. Comprehension of how the National District development plans (or traffic control plan) might affect the waste generation and waste management, especially the waste collection is required.	Level 3-4 It has increased the relationship between DIGAUE with the Urban Planning Department for the construction norm which should specify that it is mandatory to assign a space for wastes in the new buildings. DIGAUE´s personnel have the capacity to adapt the policies on issues related to wastes to the demands of urban development.	Level 3-4 There is no progress on the process to approve the construction regulation which specifies that it is mandatory to assign areas to store solid waste in new buildings. The leverage by DIGAUE is limited to promote the regulation approval.	It is under discussion by the City Council the ordinance for temporary waste storage from multi- family buildings. The adjustment of routes due to change in traffic direction is done according to modifications in the city. Personnel have the capacity to conduct this task. We conduct night time collection in Historical Center of the city and main avenues from 6 pm to 12 midnight when the transfer station closes.	Level 4 In spite the ordinance has not been approved for temporary waste storage, DIGAUE has the capacity to identify changes in urban planning which can affect waste management.
National Policy	Waste management policy	Is waste management policy at national level clearly established, and is its contents understood?	Yes. SEMARENA has issued regulations on the proper management of wastes according to their type, and municipalities are responsible for urban solid wastes (non hazardous). On the other hand, ADN approved regulations on cleansing which determine the standards for solid waste management in the city.	Level 2 The nationwide policy about solid waste management is limited to the Environmental and Natural Resources Law, but there is no National Plan clearly defined. There is not enough understanding of the relation between national policy (subsidies, 3Rs, competencies, etc.) and the solid waste management activities in the National District.	Level 2-3 It is being developed a revision of the Master Plan as part of the development project which would allow DIGAUE personnel to reach the capacity to apply the national policy on matters of wastes in the National District.	Level 3 There has been progress in reviewing the Master Plan and the group Counterpart members has increased its knowledge to conduct an adequate review of the Master Plan.	It is still under discussion with the Environmental Ministry, the approval with consensus and discussed beforehand of a national policy for waste management. The National Congress should discuss two bills for solid waste, but they have not been discussed so far, consequently, their approval seems very difficult.	Level 3-4 The national policy about waste management is still based upon the Law for environment and natural resources, however, there are initiatives to enact a Waste Law at a national level and it is possible that it is enacted in the medium term.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
	Relevant laws/ regulations	Obligations stated in the laws and regulations are well understood and implemented?	Yes, they are understood but in most cases they are not carried out.	Level 3 National laws and local regulations are well known, but there is no further analysis of why those obligations or responsibilities are not complied with.	Level 3-4 It has a clear regulation for solid waste management in the National District and it is being well understood by DIGAUE personnel as well as the need to increase its compliance. Similarly, there is a discussion process of the Capital Law which would give sanctioning capacity to ADN.	Level 3-4 There has not been any progress to enact the Capital Law and it is possible that it will not be approved in the near future, consequently, ADN will not have the capacity to penalize those who discharge inadequately wastes.	Because we do not have municipalities which can enforce through administrative means, and taking into account that environmental issues are not first priority yet, existing regulations are not complied fully.	Level 4 Capital Law has not been approved which would grant capacity to penalize to the municipalities; this measure would promote compliance of relevant waste regulations. However, recent appointment of José Miguel Martínez as Environmental Secretary of ADN creates better options to promote compliance of relevant regulations related to environment and waste management.
		How to deal with hazardous waste such as medical waste is well understood?	Some coordination efforts have been made with the State Public Health and Social Welfare Department with regard to medical wastes, including pilot projects implementation, however the standards are not yet applied in most of the medical institutions, especially in private ones.	Level 2 The responsibility for the hazardous wastes management lies on those who generate them and the State Secretariat of Environment and Natural Resources is in charge of surveillance these activities. However, mixed wastes are managed by DIGAUE. The development of a policy in which health institutions gradually undertake segregation and treatment of hazardous wastes is required.	Level 3 There is legislation about hazardous waste from hospitals which should be supervised by the Ministry of Environment and Natural Resources (MARENA). In ADN there is clarity about the obligations by hospital hazardous waste generators and about its management, but there has not been progress to achieve that institutions comply with the obligations defined by law.	Level 3 There are not important progresses in the compliance of the regulation for healthcare institutions.	Regarding hospital waste, DIGAUE develops a pilot project for separated waste management from health care facilities which serves about 15 percent of registered establishments.	Level 3-4 The recent appoint of José Miguel Martínez as ADN´s Environmental Secretary creates better options to promote compliance of relevant regulations related to hospital waste.
	Environm	Are environmental	Yes. Processes are	Level 2	Level 2-3	Level 2-3	We do not have	Level 3-4

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
	ental Assessment	assessment processes necessary to develop following facilities well understood? Waste management facilities, including composting plant, recycling plants, and transfer stations.	understood but not completely. In our case, some measures were taken to reduce the environmental impact produced by the Transfer Station operated by ADN, but other measures like controls on air pollution, noise, pest and residual water are not complied with.	In solid waste management, there are more concerns about urban image than about environmental impacts. In the case of solid waste management facilities, operating demands are given priority over environmental efficiency. More understanding on environmental impacts of SWM facilities, as well as on procedures or instruments for evaluating such impacts is required.	There is progress on the understanding about the need in environmental prevention regarding waste management; however, DIGAUE´s personnel still need more training about environmental impact of facilities for waste management and procedures and instruments for the evaluation of environmental impacts.	There is not progress on the understanding of the objectives and procedures to evaluate environmental impacts for solid waste facilities with regards especially to solid waste in the transfer station.	composting facility in the District, but there are informal facilities for separation and trading of valuable items; unfortunately, there is no compliance with corresponding environmental evaluations. Similarly, although the Transfer Station operates adequately for the amount of waste that receives, there has not been conducted previously any environmental assessment nor conducted any environmental management plan.	The recent appointment of José Miguel Martínez as ADN´s Environmental Secretary creates better options to conduct environmental impact study for solid waste facilities and corresponding corrective or mitigation measures.
Legal framework of ADN	Ordinances	Are the content of the ordinance established in 2006 well understood?	Yes. DIGAUE members understand it, but it has not been properly disseminated among the municipalities.	Level 3 The Municipal Cleansing Regulations are properly understood but there is no further analysis of why those obligations or responsibilities are not complied with.	Level 3-4 DIGAUE personnel understand well Cleansing Regulation, but this regulation has not been sufficiently informed to the residents.	Level 3-4 The situation remains the same due to lack of diffusion of Cleansing Regulation among citizens.	It is well understood, but is not widely known.	Level 3-4 It remains the lack of information among residents regarding the Cleansing Regulation.
	Licensing / Permissions	Are licensing (permission) process for private companies clearly established and executed? Distinguish between large volume discharger and household? Are	No. These operations should have based on contracts. However, that are not yet completed. And discussions were carried out in order to grant licensees to enterprises that	Level 2 They have not been analyzed in depth the requirements for granting licenses or authorizations for enterprises to provide waste collection services to large generators.	Level 3 There is progress in the process to provide permits and authorizations to companies to provide service to big generators.	Level 3 Permits were granted to some collection companies for big generators, but it is a process which is just beginning and requires expanding the number of	Household collection contractors can still collect waste from big generators if wastes are placed on public roads. Currently, four specialized companies have contracts to collect big generators; in the meantime, in the	Level 4 The terms of the contract for household waste collection between the contractors and ADN are defined. The foundations for the approval of the ordinance for big generators have been

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		other procedures on private consignment clear and implemented?	fulfill the requirements.	The impacts that might have on solid waste management system, or on the revenues from payment to collecting services have not been studied either.		authorized companies.	Cleansing Committee at City Hall, the proposed ordinance for big generators and construction debris is being discussed.	placed; consequently, big generators will be able to contract waste collection with authorized private companies.
Financials	Revenue and expenditure	Are revenue and expenditure balanced?	No. Income is much lower than expenses.	Level 2 If the subsidy is maintained for the tariff of generators in poverty, income will always be lower than expenses, however review on the desirable ratio between income and expenses is required.	Level 2-3 It is a public decision that subsidies should be given to sectors under poverty conditions; consequently, it is difficult that income is balanced with expenditures, however, there is the intention to increase income by charging big generators and middle and high income sectors, and as a result, subsidy can be reduced. It is required to increase training to redefine collections areas during the revision of the Master Plan.	Level 3 Fees were updated for the charge on waste collection, but there still remains the problem regarding deficient payment by generators.	Currently, own income only covers one third of DIGAUE´s cost, another third is covered by the central government because it grants a part of taxes collected; a part of them is applied to cover cost of cleansing service which is offered to everyone, it does not matter whether residents pay the service or not. The remaining third part is covered by ADN´s own resources which are collected from other sources.	Level 3-4 Cost for waste management is higher than income from fee collection from the service. DIGAUE lacks regulatory authority to pressure for fee payment. Recently, fee for collection service was updated, but fee is only paid by less than 50% of clients. Fee does not reflect collection cost service and waste management.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
	Expenditure (cost)	Able to calculate costs for street sweeping, collection, and treatment?	Yes, but based on a large number of assumptions and estimates.	Level 3 There are enough data for calculating the costs, but it is necessary to clarify suitable parameters for calculating services costs, including indirect costs, because this will be the base to determine the service tariff and payment to contractors'.	Level 3 Collection cost is calculated very exactly because there is a good monitoring system to comply with the contracts and systems to verify the weight of wastes collected. There is not knowledge that there is progress in calculating street sweeping cost which is done by DIGAUE´s personnel.	Level 3 It remains the evaluation on cost calculation for collection service because there are not important progresses on this field.	Yes, every time more precisely.	Level 4 Cost calculation is conducted for waste collection service and final disposal based on payment to the collection companies and payment for waste disposal at the sanitary landfill. It is still necessary to include other items in waste management such as operation and maintenance of DIGAUE´s collection vehicles, cost to monitor collection routes, DIGAUE´s administrative costs, etc.
	Waste collection fee	Are target for fee collection achieved? Are non-attaining target understood?	The established tariffs are low, but over the years, the public have gradually acquired culture about payment that they did not have before.	Level 3 Some progress has been made in collecting fees, but the expectations for increased payments through the application of penalties are too high. Particular attention on major generators is needed and also an analysis of the social conditions.	Level 3-4 They have clear the objective to increase collection service charge as well as social sectors that can pay the service. There is also clear the demand that charge should be preceded by more efficiency in collection.	Level 3-4 There are not important progresses on the increment of fee payment by generators.	More than 60% pays collection service	Level 3-4 There is the objective to increase fee collection due to payment for collection service and increment of the number of clients who pay, but it is an objective in the medium and long term.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		Are efforts to solve the issue made? Is fee collection done appropriately?	This issue has been discussed in depth. Only 50% of the users pay for the service.	Level 3 Efforts have been made, but some measures are beyond DIGAUE competency. The goals about the desired level of fee collection should be defined again.	Level 3 Income derived from fee charges is neither going directly to DIGAUE nor DIGAUE has the responsibility to press for payment. However, it is convenient to provide more training to DIGAUE´s personnel about the need to increase ADN income through fee collection increment.	Level 3 There is consciousness that payment should increase by generators, however, DIGAUE does not have capability to enforce nor tools to increase payment.	More than 60% pay collection service.	Level 3-4 During the three years of the project, fee collection increased in 10%. DIGAUE does not have authority to increase the percentage of clients who pay collection fee, but a more accurate waste management cost can help to make fee amount closer to management cost.
	Waste disposal fee	Are waste disposal fees appropriately collected?	The sanitary landfill receives a fixed amount monthly. It is a low price for final disposal compared with other Countries in the area.	Not applicable. Neither ADN nor DIGAUE is not in charge of the fee collection at the final disposal site, since they are only users of the site and pay for waste disposal.	Not applicable. Neither ADN nor DIGAUE are not in charge of the fee collection at the final disposal site.	Not applicable because neither ADN nor DIGAUE have any influence on the fee charge in the final disposal site.	Currently, we pay monthly 200,000 pesos more than previously. Beginning January 2012, the new contract defines an increment of 300,000 pesos, reaching a total o seven million pesos per months which is about 3.2 dollars per ton.	It does not apply because ADN and DIGAUE do not have intervention in dump fee collection at the final disposal site.
Institutions	Missions & Purposes	Are mission and purposes of the institution clear?	Yes.	Level 4 DIGAUE's mission and purpose are clearly defined, but recently a reorganization took place under which Environment part was removed and Vehicles and Equipment were incorporated. A new definition is required.	Level 4 DIGAUE's mission and purpose are clearly defined.	Level 4 DIGAUE's mission and purpose are clearly defined.	Employees make their own mission and purpose with more clarity.	Level 4 They are clear about DIGAUE´s mission and purpose and the staff understands them.
	Duties	Are duties for each division/department clear?	Quality Management Dpt. and Human Resources Dpt.	Level 2 Due to the reorganization of the former General	Level 3 It is already elaborated the Manual of the Organization and	Level 3-4 The revision of the Organization and Functions Manual	We continue working with Ministry of Public Administration. The establishment of a new	Level 4 We have the manual of Organization and Functions of DIGAUE;

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		Are duties for each personnel clear? Are they duty executed?	have been establishing the duties for each job in every department, but these duties are not yet carried out as they should. This issue is under discussion. This issue is under discussion.	Directorate of Environment and Urban Cleansing which was split into the General Directorate of Environmental Management and the General Directorate of Urban Cleansing and Equipment, the structure and duties of each job are being defined and the working manual is being prepared.	Functions of the current General Directorate of Urban Cleansing and Equipments which was prepared by the technical staff of the Quality Management Directorate. It is in the process of revision to implement it in 2011.	in the current DIGAUE has been finished and it is expected its authorization.	Secretariat creates new challenges in this sense, for a period no less than 6 to 12 months, we expect to have organized the new entity.	however, with the appointment of José Miguel Martínez Guridy as ADN´s Environmental Secretary, most certainly the functions of DIGAUE will be redefined as well as the newly created Environmental Management Secretariat with regards to waste management.
	Communication/ information sharing	Is information to be shared among divisions/ department clear? Is information shared as expected?	No	Level 2 Due to DIGAUE reorganization there is no clarity about the information in each department or about information sharing.	Level 3 There is clarity on the information which should be shared by different divisions o departments inside DIGAUE. It is still missing to develop an informational system in the area of vehicle maintenance.	Level 3-4 There is clarity on the information which should be shared by different divisions o departments inside DIGAUE. The system to record repairs and in the warehouse for vehicle maintenance has been finished, but it is still pending linking them for a better control of operations.	There is still a lot to be achieved in this field, even though nowadays there is continuous flow of information with income area, financial area, human resources area, general and technical secretariats, among others.	Level 3-4 With the development of the project, there were clarified many issues about information flow between several areas of DIGAUE. Specially, workshop where operations record were organized or it was clarified relevant information which shared among different areas inside the workshop.
	Personnel management	Not overstaffed?	From our point of view, if some tasks become automated and more efficient, then it might be possible to reduce the staff.	Level 2 Apparently, it has not been carried out an evaluation of staff activities or if there is a staff excess or shortage. It is necessary to determine the staff	Level 2-3 The personnel are sufficient and adequate for monitoring activities which are currently being conducted. It is possible that more	Level 2-3 The conditions about personnel situation remain the same; additionally, in spite there was a personnel	Reiterate answer of 2009.	Level 3-4 After adjustment of street sweeping personnel, staff assignments have been redefined in some areas. There are deficiencies in the number of

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
				number and skills required for implementing the M/P.	personnel are required when recycling activities are being conducted or when other activities to make other use of waste is conducted.	reduction in manual street sweeping, service is still provided adequately.		personnel for work in intermediate assignment.
		Are all attendance record correctly kept?	Not completely.	Level 3 The Counterpart team does not keep complete information on staff attendance records. The implementation of the Master Plan calls for the keeping of full records on staff attendance.	Level 3 The Counterpart team does not keep complete information on staff attendance records.	Level 3 The Counterpart team does not keep complete information on staff attendance records.	We reiterate the answer from 2009. Attendance record, delays, permits, and absenteeism is kept adequately.	Level 3-4 Personnel record is kept adequately.
		Is health check done?	There is a health section where employees may receive free primary medical attention.	Level 2 It is not specified that there is or not a program for medical check-up for the operations personnel. The implementation of the Master Plan calls for the record keeping on personnel health conditions.	Level 2-3 Street sweeping personnel have access to health service, but no measure has been taken regarding preventive health nor has been considered the risk of contact with waste. There is clarity on this issue and there is a project to take measures for more protection of street sweeping workers.	Level 2-3 The conditions remain about the access of personnel to healthcare services. No preventive measures have been taken.	We reiterate answer from 2009; there is a lot of improvement in health coverage, as well as occupational safety. Health check is not mandatory yet.	Level 3 Conditions about access by personnel to health service are kept. Hygiene conditions and occupational safety are improved in the workshop.
		Are pensions and/or insurances applied?	Yes. In case of temporary or permanent disability, it is covered by the Social Security Law. We have medical insurance plans with different	Level 3 There is not enough clarity as to whether it is taken into account or not the risk level of workers in contact with waste. The implementation of the Master Plan calls	Level 3-4 DIGAUE workers are covered with social security.	Level 3-4 DIGAUE workers are covered with social security.	We reiterate answers from 2009. Pensions and insurance coverage are applied.	Level 3-4 DIGAUE´s workers are covered with social security.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
			ARS (Administrador de riesgo de salud) for workers in the institution.	for the record keeping of personnel health conditions.				
Community (citizen relations)	Complains	Are complains appropriately responded?	All users' complaints are recorded in the system. They are submitted to the field supervisor, who is obliged to receive and study them and give an answer to the public.	Level 4 The attention level of the complaints is satisfactory, but there is no information about the trend of complaints index, or complaints analysis. e.g. area, route, reason, etc.	Level 4 Attention level of complaints is satisfactory. It would be convenient to conduct complaint analysis by zone, route, cause, etc. To define performance indicators.	Level 4 It still remains a record of complaints and the service level of complaints is satisfactory.	This service has been strengthened. There is an average of ten complaints per day.	Level 4 A complaint record is kept and complaint response level is satisfactory.
	Satisfaction to the services	Is satisfaction level for the collection service measured?	Yes. Surveys are carried out periodically by the citizen observatory (a department inside ADN) which assesses users' satisfaction for every service offered by the municipality.	Level 5	Level 5	Level 5	Surveys continue to be conducted by Citizen Watch office.	Level 5
		Are the results of the survey feed back to the service?	Yes. Results are analyzed and discussed to make improvements whenever it is necessary.	Level 5	Level 5	Level 5	Surveys continue to be conducted by Citizen Watch office which certainly provides feedback to waste management system. These surveys are explained in a meeting of Directors called by the Mayor.	Level 5

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
Waste collection and hauling	Collection plan	Are collection area, frequency of collection, collection time, and rules for waste discharge clearly established, and executed as established?	Routes and frequencies have been designed but there are a lot of shortcomings in their implementation.	Level 3 Shortcomings on routes or frequencies do not depend entirely on design or supervision, but on administrative procedures for the contracts compliance. It is necessary to define whether routes should be adjusted to collection vehicle capacities or whether vehicles should be adjusted to the designed routes.	Level 3 Route and frequencies are established, but they are not complied with due to deficiencies by companies contracted for collection. There is no definition on the rules for discharge by generators. It is very possible that the adequate discharge pilot project which will be developed as part of the follow up project will increase the capacity of the counterpart team to face these types of problems subsequently.	Level 3 There are collection routes and frequencies clearly defined, but their compliance is inadequate due to deficiencies by the contractor. It has not been possible to demand compliance by the contractor because ADN has debts with those companies.	Even though there are still issues to be solved, basically, the quality, the implementation of the collection service is developed with great stability, additionally, it is monitored by DIGAUE´s staff.	Level 4 There are routes and frequencies established clearly. Compliance by contractors has improved because it was paid the overdue amount that ADN had with them and because the contractors procured new collection units which caused improvement in compliance of routes and frequencies. There are still some deficiencies because the contractors did not procure adequate vehicles to provide service in narrow roads or with difficult access.
		Is collection works done by private companies are well understood?	Currently, they face problems regarding the service quality and the implementation of the route according to its design.	Level 3 Shortcomings on routes or frequencies do not depend entirely on design or supervision, but on administrative procedures for the contracts compliance. It is necessary to define whether routes should be adjusted to collection vehicle capacities or whether vehicles should be adjusted to the designed routes.	Level 3 The deficiencies on implementation of routes and frequencies that result in administrative procedures for the contracts´ compliance.	Level 3 It has not been possible to demand the compliance of contracts by companies in charge of collection because of pending debts with these companies.	Several pilot projects have been implemented which show the trust between citizens and the collection service.	Level 3-4 Routes and frequencies which should be covered by the contractor are well defined and their compliance is monitored, but there are still many deficiencies in compliance by the companies and the capacity to penalize by DIGAUE is limited.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
	Public relations	Is above information known to households?	No. Only in areas where Pilot Projects have been implemented.	Level 2 In general, the public does not know the schedule or frequency of collection routes. An intense work of information dissemination and work with community would be required. It is necessary to define the possible impact of knowing routes and frequency with the service improvement so as to avoid excessive expectation in implementation of the Master Plan.	Level 2 In general, population does not know schedule and frequencies for the collection routes. The results of collection pilot project will derive in experiences about better manners to inform the residents about routes and frequencies and the impact of this information in complying with the discharge rules.	Level 2-3 One of the results of the pilot project is that citizens are willing to respect the waste discharge regulations if they are informed about time and frequencies of collection.	Several pilot projects have been implemented which show the trust between citizens and the collection service.	Level 3-4 The pilot project for adequate waste discharge by generators for the collection service provided experiences and established the foundations to improve with regards to information to clients about routes and frequencies of the collection service.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		Are households discharged their waste according to the set rules?	No. There has been a deficiency of guidance and information dissemination.	Level 2 Although the citizens receive proper information about routes and frequencies, it is difficult for them to discharge their wastes in accordance with them, since there is not enough awareness as to the environmental and image benefits involved when wastes are left on the streets for a shorter period, furthermore it would have to be changed the deep-rooted habit of the public. It is necessary to define the possible impact of knowing routes and frequency with the service improvement so as to avoid excessive expectation in implementation of the Master Plan.	Level 2 Population does not know sufficiently neither the discharge rules nor the routes and frequencies for collection. The collection pilot project certainly will derive in experiences about better manners to inform citizens on discharge rules and routes and frequencies.	Level 2-3 Population does not know sufficiently neither the discharge rules nor the routes and frequencies for collection. The pilot project about adequate discharge derived in experiences about mechanism to inform citizens on discharge rules and routes and frequencies.	Several pilot projects have been implemented which show the trust between citizens and the collection service.	Level 3-4 The pilot project for adequate waste discharge by generators for the collection service provided experiences and established the foundations to improve with regards to information to clients about routes and frequencies of the collection service.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
	Waste collection task management	Are procedures for waste collection work established?	Yes, the procedure is agreed by both sides and is set up in contract.	Level 2 The procedure has been established, but it would be convenient to review it. Because it is difficult that the current design of discharge and collection allow to reduce costs and to improve the public image by substantially shortening the time duration which the wastes remain on the street.	Level 2-3 There are established procedures for waste collection works, but discharge regulation non-compliance causes waste to remain in public areas for long periods.	Level 2-3 There is not progress in this field. There are established procedures for waste collection works, but discharge regulation non-compliance causes waste to remain in public areas for long periods.	The collection service works in a stable manner, everything is regulated with contracts.	Level 3-4 There are established procedures for waste collection and the pilot project for adequate discharge proved that it is possible to reduce the period of time that wastes remain in public areas.
		Documented?	Yes. Under contract and technical specifications.	Level 2 In general it is documented, but wastes discharge and collection points are not defined for each route. This increases the cost and makes the service difficult. Furthermore it causes the permanent presence of wastes on the streets. The discharge and collection system must be modified in the medium or long term so as to include it as a part of the Master Plan.	Level 2-3 Discharge regulations are registered and collection system is defined in technical specifications in the contracts. However, contracts´ compliance is not complete.	Level 2-3 Discharge regulations are registered and collection system is defined in technical specifications in the contracts. However, contracts´ compliance is not complete.	Collection service works in stable manner, everything is regulated with contracts, and adequate records are kept.	Level 3-4 The contracts specify clearly the responsibilities by the collection contractors, but collection system which is used does not allow improving the service because wastes are taken out and placed in public areas as they are generated.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		Executed?	There are some weaknesses	Level 3 Deficiencies (weaknesses) are related to contract fulfillment, not to the waste amount collected, collection point vigilance or the presence of waste on the streets. Which are not ascribable to collection efficiency, but to discharge and collection system design.	Level 3 Waste collection procedures are not implemented adequately because there are deficiencies in the companies contracted for collection works. In spite there is strict supervision over the companies, the demands for compliance cannot be drastic because ADN has debts with them.	Level 3 It remains the same situation that waste collection procedures are not implemented adequately because there are deficiencies in the companies contracted for collection works. In spite there is strict supervision over the companies, the demands for compliance cannot be drastic because ADN has debts with them.	Collection service works in stable manner, everything is regulated with contracts, and adequate records are kept.	Level 3-4 Routes and frequencies of the service are not implemented adequately due to deficiencies of the contractors.
		Is collection cost understood?	Expenses and collection cost are determined.	Level 3 The collection cost for DIGAUE is payment to contractors. Cost analysis is done at the moment for setting up or review of tariff rates.	Level 3-4 The collection cost for DIGAUE is payment to contractors. Cost analysis is done at the moment for setting up or review of tariff rates.	Level 3-4 The collection cost for DIGAUE is payment to contractors. Cost analysis is done at the moment for setting up or review of tariff rates for the contracted companies.	Collection cost is recorded and monitored in detail.	Level 4 Collection cost for DIGAUE is payment to the contractor for the amount of waste collected. Route compliance is monitored.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		Are performance index established?	Partially.	Level 3 The performance index is related to routes and frequencies compliance, but it cannot be established based on collection points or waste collected according to the discharge and collection system. This item should be included in the Master Plan in order to evaluate targets as a function of routes and frequencies performance, not as a function of the amount or percentage of wastes collected.	Level 3 The performance indicator is related to routes and frequencies compliance, but it cannot be established based on collection points or waste collected according to the discharge and collection system. It would be convenient to include this issue on the revision of the Master Plan to evaluate the goals in function of compliance of routes and frequencies, not as function of amount and percentage of waste collected.	Level 3 The evaluation remains the same because the performance indicator is related to routes and frequencies compliance, but it cannot be established based on collection points or waste collected according to the discharge and collection system. It would be convenient to include this issue on the revision of the Master Plan to evaluate the goals in function of compliance of routes and frequencies, not as function of amount and percentage of waste collected.	Service indicators and citizens´ complaints are registered based on procedures established and known by the analyst.	Level 3-4 The indicator for operation of the collection system relates to routes and frequencies which are monitored. It is reiterated the suggestion from the Master Plan that updating of the Master Plan should define collection goals related to compliance of routes and frequencies, and not with regards to amount of waste collected.
		Is methodology to acquire such index established?	No	Level 2 Together with the review of the discharge and collection system, performance index on service efficiency should be designed.	Level 2-3 In the revision of the Master Plan, it can be included the revision of compliance indicators for waste collection.	Level 2-3 It is suggested that in the revision of the Master Plan, it can be included the revision of compliance indicators for waste collection.	Service indicators and citizens´ complaints are registered based on procedures established and known by the analyst.	Level 3-4 Compliance indicator is established as a function of citizens´ complaints and graphical evidence of supervisors.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		Are methods to analyze index, how to feedback to actual work, developed, and executed?	No	Level 2 Together with the review of the discharge and collection system, performance index on service efficiency should be designed.	Level 2-3 In the revision of the Master Plan, it can be included the revision of compliance indicators for waste collection.	Level 2-3 It is suggested that in the revision of the Master Plan, it can be included the revision of compliance indicators for waste collection.	Service indicators and citizens´ complaints are registered based on procedures established and known by the analyst.	Level 3-4 Weekly meetings are conducted by the supervisors´ chiefs for each Collection Ward and they are feedback to the service based on the outputs found.
	Vehicle management	Are there enough vehicles?	Yes. But not of the right type.	Level 2 Domestic collection is done based on contracts with enterprises, and collection vehicles belong to those enterprises. Vehicles belonging to ADN (DIGAUE) are used to collect wastes from large generators in order to back up the contractors' shortcomings. The loading capacity of contractors' vehicles does not match routes' design which causes service problems that would have to be solved using DIGAUE vehicles. Necessary loading capacity and the number of vehicles per route should be reviewed to improve the service.	Level 2-3 Domestic collection is done based on contracts with enterprises, and collection vehicles belong to those enterprises. Vehicles belonging to ADN (DIGAUE) are used to collect wastes from large generators in order to back up the contractors' shortcomings. In the contracts, it is defined the vehicles which should be used for collection and after debts are paid to the companies contracted, ADN could demand the compliance of contracts with regards to vehicles that are necessary for collection.	Level 2-3 The same conditions remain for collection vehicles, both own and contracted to companies.	Currently, the number and quality of compactor units has improved regarding collection service provided by contractors.	Level 3-4 Contractors have procured new collection vehicles which are expected to help improve collection service. DIGAUE procured recently three small collection vehicles to strengthen their vehicle fleet and complement vehicles donated by Japan which already reached the end of their service life.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		Are they properly distributed according to collection areas?	As there is all routes design, each route has pre-determined type of vehicle with respective loading capacity and characteristics. However, in the case of breakdowns, it is modified.	Level 2 Routes should be adjusted according to the loading capacity of the vehicles of service suppliers, by either changing the routes or changing the vehicles used by contractors.	Level 2-3 In the contracts, it is defined the vehicles which should be used for collection and after debts are paid to the companies contracted, ADN could demand the compliance of contracts with regards to vehicles that are necessary for collection.	Level 2-3 Vehicles which are used currently for collection do not comply what is defined in the contracts, but it is expected that when debts are paid to the contracted companies, it could be demanded compliance of the contract.	Some weaknesses are still found in Community Foundations and own ADN vehicles, but there has been a lot of work in this last component.	Level 3-4 Service areas are defined for collection vehicles: the companies contracted service collection in all national district, community foundations in areas where there is not access for compactor vehicle from the contractor, and own vehicles from ADN to satisfy deficiencies from contractors, collection in pilot project area, and big generators.
		Is there procurement plan for the future?	No answer	Not applicable. This decision does not depend on DIGAUE or the counterparts.	Level 2-3 There is the intention that DIGAUE acquires 20 collection vehicles to conduct waste collection for big generators or in areas defined in the National District. JET is advising DIGAUE on the most adequate specifications for these vehicles.	Level 2-3 There are available the technical specifications, but there is not progress in the procedures to conduct the procurement of new vehicles for DIGAUE.	Currently, the number and quality of compactor units has improved regarding collection service provided by contractors.	Level 3-4 There is not a plan to procure collection units by DIGAUE. Maintenance records and workshop activities which were produced during the project can become a foundation to plan the procurement of collection vehicles.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		Is maintenance done adequately?	One of the weaknesses is maintenance management. It is usually a breakdown repair instead of preventive maintenance. Therefore, to work for this point is important in the Project implementation.	Level 2 Obviously, vehicles maintenance has a lot of problems but it is not the main factor in collection deficiencies. The relationship between maintenance improvement and collection performance should be re-defined in the Master Plan and in this Project, in order to set up measurable targets in this aspect.	Level 2-3 Currently, preventive maintenance is being done to DIGAUE collection vehicles and there is progress to improve corrective maintenance. Even though there are deficiencies mainly on lack of budget to procure spare parts.	Level 3 Preventive maintenance is done adequately for DIGAUE´s collection vehicles, but there still remain deficiencies regarding corrective maintenance because of lack of spare parts, especially tires.	No answer	Level 4 One of the most important achievements of the Project was the establishment of a planned checking and maintenance of DIGAUE´s collection vehicles, as well as repair record for each vehicle and for workshop management.
Street sweeping	Cleaning plan/ work	Is street or park that will be cleaned clearly identified?	The system is designed to cover main streets, parks and public spaces.	Level 4 It could be convenient to review it out, but possibly it is beyond the scope of this Project.	Level 4 It is clearly identified the street sweeping areas serviced by DIGAUE. This concept is beyond the scope of this Project.	Level 4 It is clearly identified the street sweeping areas serviced by DIGAUE. This concept is beyond the scope of this Project.	I reiterate the previous comment, mainly now with better opportunities to improve this assignment; now that I will be in charge jointly of environmental management staff which is in charge of some parks, squares, and public areas.	Level 4 Same comment as in 2011
		Is frequency and time of cleaning determined?	Yes. Our employees work mostly from 7:30 to 13:00. Some routes have other frequencies or schedules, according to predetermined design features.	Level 4 It could be convenient to review it out, but possibly it is beyond the scope of this Project.	Level 4 There are defined hours and frequencies for street sweeping on the roads serviced by DIGAUE. This concept is beyond the scope of this Project.	Level 4 There are defined hours and frequencies for street sweeping on the roads serviced by DIGAUE. This concept is beyond the scope of this Project.	I reiterate the previous comment, mainly now that there are better opportunities to improve this assignment, now that I will be in charge jointly of environmental management staff which is in charge of some parks, squares, and public areas.	Level 4 Same comment as in 2011

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		Are workers appropriately allocated?	This is an ongoing little-by-little process to develop, from a working system based on clearing group or brigades to a system of individual assignment to a route. The results of this change are already visible.	Level 4 It could be convenient to review it out, but possibly it is beyond the scope of this Project.	Level 4 It is changing the work system for street sweeping works. This concept is beyond the scope of this Project.	Level 4 The reduction of personnel in street sweeping forced to modify the work system and serviced areas. This concept is beyond the scope of this Project.	I reiterate the previous comment, mainly now that there are better opportunities to improve this assignment, now that I will be in charge jointly of environmental management staff which is in charge of some parks, squares, and public areas.	Level 4 Same comment as in 2011
		Are works carried out as above?	Yes. In areas where the system has been implemented, there is a continuous monitoring based on direct supervision of working areas.	Level 4 It could be convenient to review it out, but possibly it is beyond the scope of this Project.	Level 4 There is adequate supervision of street sweeping activities and the designation of crews. This concept is beyond the scope of this Project.	Level 4 There is adequate supervision of street sweeping activities and the designation of crews. This concept is beyond the scope of this Project.	I reiterate the previous comment, mainly now that there are better opportunities to improve this assignment, now that I will be in charge jointly of environmental management staff which is in charge of some parks, squares, and public areas.	Level 4 Same comment as in 2011
Waste treatment	Waste haulage data management	Are volume and hauler identified?	Yes, various information databases are managed and waste amount control is recorded at the landfill as well as at the transfer station.	Level 4 It could be convenient to review concepts included in database, because criteria related with payment control are considered but not for control or treatment of waste.	Level 4 It could be convenient to review concepts included in database, because criteria related with payment control are considered but not for control or treatment of waste.	Level 4 It could be convenient to review concepts included in database, because criteria related with payment control are considered but not for control or treatment of waste.	Calibrations are conducted under the contract of the company which installed the weighbridge. A calibration is done every six months. Additionally, there is an identification system with radio-frequency which identifies each actor registered adequately.	Level 4 Same comment as in 2011

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
		Is weighbridge properly working?	Yes, even though the weighbridge calibration is not conducted at recommended frequency.	Level 4 Review the calibration.	Level 4 It is suggested to periodically calibrate the weighbridge.	Level 4 It is suggested to periodically calibrate the weighbridge in the transfer station.	Calibrations are conducted under the contract of the company which installed the weighbridge. A calibration is done every six months. Additionally, there is an identification system with radio-frequency which identifies each actor registered adequately.	Level 4 Same comment as in 2011
	Waste treatment plan / work	Is future treatment plan established based upon the measured data? Is landfilling procedure clearly established? Is it documented and executed? Are models, types, and number of heavy machineries appropriate? Are workers appropriately allocated?	I have no information on this matter. We do not know. No. No. No.	Level 3 DIGAUE is not concerned with waste final disposal works. It could be convenient to prepare for the future of final disposal in the long term.	Not applicable DIGAUE is not concerned with waste final disposal works.	Not applicable DIGAUE is not concerned with waste final disposal works.	It has improved management at the sanitary landfill, n all the operations, both in their record as in the discharge. Recently, it was procured necessary equipment and a second weighbridge has been installed.	It does not apply. DIGAUE does not have influence in waste final disposal. In this last year of the project, IDB has been conducting a study for the Great Mancomunidad of Santo Domingo which has among its objectives the location of final disposal sites.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
	Waste pickers	Are number of waste pickers known? Is waste picker disturbing treatment process? No criminal activities, like violence, occurred? Is there any measures taken for them?	There is no strict control of waste pickers, therefore the number of persons involved in this activity is unknown. Yes, they generate disruptions. Yes, violent situations have arisen. The final disposal site administration has taken some measures, but the situation is not yet under control.	Level 3 DIGAUE is not concerned with waste final disposal works or any other activities carried out in the final disposal site.	No applicable DIGAUE is not concerned with waste final disposal works.	No applicable DIGAUE is not concerned with waste final disposal works.	700 recyclers were interviewed at Duquesa. Their activity does not interrupt the landfill operation in the area. There is not criminal activity nor recurring violence, although there are some incidents.	It does not apply. DIGAUE does not have influence in waste final disposal.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
	Hazardous waste	Is hazardous waste, like medical waste, not mixed with municipal waste?	Together with the Master Plan, this wide-scope project has been carried out, starting from a pilot project for waste segregation at sources and proper management up to the enactment of regulations on waste management. Currently, a collection route for six health care institutions complying with segregation at source requirements is under way.	Level 2 There are regulations about hazardous medical wastes, but the vigilance is National Government competency. DIGAUE might place pressures on health care institutions so as to avoid mixing their ordinary wastes with hazardous wastes.	Level 2-3 It is known the regulation on hazardous waste matters from hospitals and some informative work has been conducted in healthcare centers. DIGAUE might place pressures on health care institutions so as to avoid mixing their common wastes with hazardous wastes.	Level 2-3 The evaluation remains the same because there is not progress on hazardous waste management in health care centers. DIGAUE does not have jurisdiction on hazardous waste.	We reiterate the previous comment (2009), but informing that we (DIGAUE) currently provide services for a little more than forty healthcare centers, a 15% of the total.	Level 3-4 DIGAUE does not have jurisdiction on hazardous waste, but it provides services of hospital waste collection (non-hazardous). With the appointment of José Miguel Martínez Guridy as Environmental Secretary of ADN, the doors are open to provide better services of health care waste collection.
Recycling	Recycling activities	What type of recycling is done?	Basically paper	Level 2 Recycling activities are very poor and are carried out as an alternative for employment of marginal people. There is a market for some recyclable materials, but material recovery should be promoted mainly in large generators and through special program.	Level 2-3 DIGAUE staff has made progress regarding the knowledge of recycling activities that are being conducted in the National District and promoted some recycling activities in institutions and companies. The implementation of the recycling pilot project will give experience to DIGAUE staff to expand the results.	Level 3 The conditions remain the same regarding recycling, however, the pilot project on paper produced experiences and data which can be used to expand the project to other areas and institutions.	Basically paper, glass, ferrous metals, aluminum, plastic of several types, but still not very developed any activity around them; they are very informal.	Level 3-4 The paper recycling pilot project offered knowledge and experiences to develop recycling project in the National District, such as recyclers information registry and coordination with companies that promote recycling.

Category	Sub-category	Content	Self-evaluation DIGAUE	External Evaluation 2009	External Evaluation 2010	External Evaluation 2011	Self-evaluation by DIGAUE 2012	External evaluation 2012
	Recycling markets	Main items for recycling, trading volume, price trend, and recycling bodies.	Newspapers, cardboards and office papers	Level 2 The market capacity for recyclable materials is not known. This item should be studied.	Level 2-3 There is progress on the knowledge of the recycling market in the National District. Even when it is required more precision about the capabilities of the recycling market to absorb any increment of the amount of recyclable wastes which are recovered.	Level 3 A census of urban waste pickers in the National District is being conducted which will certainly be finished in a short term. This census will allow to know in more detail the recycling market characteristics in the ND.	The Center for the Promotion of Recycling has a record of actors which trade materials and their type which is periodically updated.	Level 3-4 In addition to the record of actors who participate in recycling market in the National District, in the Environmental Secretariat, recently created, there are projects to monitor the price of recyclable materials in the National District and to promote the expansion of the paper recycling pilot project to other schools and offices.

G.2 Individual Capacity Assessment of Counterpart

G.2.1 Individual Capacity Assessment of Counterpart Group on "Solid Waste Management"

See Annex

G.2.2 Individual Capacity Assessment of Counterpart Group on "Vehicle Maintenance Management"

See Annex

G.2.3 Individual Capacity Assessment of Counterpart Group on "Solid Waste Education and Awareness Raising"

See Annex

G.2.4 Evaluation on the organizational and institutional capacity of ADN

Evaluation on the organizational and institutional capacity of ADN and DIGAUE to attain the objectives of the Project for the Appropriate Waste Management in Santo Domingo de Guzman, National District, Dominican Republic

For the analysis of the organization/institution it was considered convenient to conduct a qualitative analysis about the strength, weaknesses, and opportunities to reach the Project objectives for the Appropriate Waste Management in Santo Domingo de Guzman, National District, Dominican Republic, taking into account the categories applicable in "Table 3–1.- Contents of the Evaluation of Capabilities (draft)" of the initial report for the Project for the Appropriate Waste Management in Santo Domingo de Guzman, National District, Dominican Republic.

Table G-2 : Evaluation on the organizational and institutional capacity

Category/ Sub-category	Organization			Institution/social systems		
	Strength	Weakness	Opportunities	Strength	Weakness	Opportunities
Basic information on ADN Urban Planning	There are identified some tendencies about urban development in the National District and it can be anticipated impacts on the waste management system.	Urban development tendencies have not been considered sufficiently in collection route design nor in resources and equipment needs to supply the demand in agreement with expected generation increment.	The creation of Environmental Management and Risk Secretariat will facilitate the identification of urban development tendencies in the National District and will also facilitate to anticipate the effect on waste management.	It has been elaborated a bill for waste internal storage for buildings.	The bill for waste internal storage for buildings will apply for new constructions.	The creation of the Environmental Management and Risk Secretariat can facilitate the approval of the bill and find means to solve waste storage inside existing constructions to which it will be applied the regulation in the approval process.
National Policy Waste management policy	It does not apply	It does not apply	It does not apply	There are defined responsibilities for ADN and DIGAUE regarding municipal solid waste management.	The policy is not clear for some wastes which require special management such as used tires, construction waste, hospital non-hazardous, sludge, batteries, etc.	The creation of Environmental Management and Risk opens the possibility that policy is defined and bills are enacted for control and special management of these wastes.
National Policy Relevant laws / regulations	There is a regulatory framework nationwide about hazardous waste.	There is little control about hazardous waste management in healthcare entities and possibly there is mixing with non-hazardous waste.	The creation of the Environmental Management and Risk Secretariat opens the possibilities to increase monitoring on wastes which are discharged in healthcare entities and proceed accordingly.	There is a regulatory framework for municipal waste management in the National District, the "Regulation for Non-hazardous Municipal Solid Waste Management" and national legislation for hazardous waste, the "Environment and National Resources Law."	The legislation and regulation is not properly informed nor its compliance adequately monitored.	The creation of the Environmental Management and Risk Secretariat establishes the possibility to inform and comply the legislation and regulation.
National Policy Environmental Assessment	It is known the need for environmental evaluation, but there is little experience and regulation is limited.	It has not been conducted environmental evaluation processes in the facilities for waste management under	It can be prevented environmental impact in the projects for the new transfer station and new final disposal sites in the	There is a regulatory framework for environmental impact prevention in the Environmental and	The regulatory framework about environmental impact is not well developed and its application is limited.	The Environmental Management and Risk Secretariat which has been created recently has a department of

Category/ Sub-category	Organization			Institution/social systems		
	Strength	Weakness	Opportunities	Strength	Weakness	Opportunities
		DIGAUE´s jurisdiction.	Great Mancomunidad of Santo Domingo, in the study that is being conducted currently by IDB.	Natural Resources Law.		Environmental Impact which creates possibilities to conduct environmental assessment and certification of facilities for DIGAUE´s waste management facilities.
Legal Framework of ADN Ordinances	DIGAUE staff knows Urban Cleansing Regulation and is searching for tools to improve waste management as a result of its implementation.	Cleansing regulation has not been informed sufficiently and ADN does not have the capacity to penalize its compliance.	The Environmental Management and Risk Secretariat becomes an important opportunity to promote information about the Cleansing Regulation and insist on its application and compliance.	Currently, the Urban Cleansing Regulation is an adequate legal framework for municipal waste management in the National District.	ADN does not have the penalizing capacity to promote compliance of Urban Cleansing Regulation.	The Environmental Management and Risk Secretariat that has been recently created can represent a good opportunity to promote environmental education and continue to insist on obtaining penalizing capacity by ADN to comply with the Urban Cleansing Regulation.
Legal Framework of ADN Licensing. Permissions	It has initiated issuance of permits and licenses for companies which provide waste collection service directly to big generators.	Controls are not established about operation of companies which collect wastes from big generators.	It is anticipated a control system to monitor wastes which are collected by companies from big generators.	There is not a regulation which establishes waste collections by big generators.	A regulation to enforce big generators to contract collection service with companies has not been approved.	The Environmental Management and Risk Secretariat can assist to approve the regulation about Waste Big Generators.
Financials Revenue and expenditure	There is the intention at DIGAUE to attain balance between income from charges and waste management cost.	It has not been analyzed in depth the amount of waste management cost which should be covered with the fee tariff from the collection service.	The Environmental Management and Risk Secretariat can provide arguments and estimates about waste management cost to the ADN´s financial department in order to define adequate fee collection.	It does not apply	It does not apply	It does not apply
Financials Expenditure (cost)	It is defined the service cost through a good control of waste collected by the companies.	It has not been conducted a waste collection service cost analysis to define some parameters of the fee amount which is paid to	DIGAUE´s collection vehicle repair cost calculation can help to improve collection service cost calculation which is provided	It does not apply	It does not apply	It does not apply

Category/ Sub-category	Organization			Institution/social systems		
	Strength	Weakness	Opportunities	Strength	Weakness	Opportunities
		the collection companies to conduct collection.	directly by DIGAUE and can provide some information about fee tariff which should be paid to the private collection companies.			
Financials Waste collection fee.	In spite that there are not effective pressing measures, it is estimated that 60% of collection service clients pay for it.	Collection deficiencies are observed in the reluctance by an important population sector to pay for the service.	Collection improvement could influence payment increment by dischargers.	There is legal basis for collection service charge.	Big generators directory (ICIs) is very deficient. It is not applied any pressing measure to make payment.	Collection improvement could lead to payment increment by dischargers.
Financials Waste disposal fee.	It does not apply	It does not apply	It does not apply	It does not apply	It does not apply	It does not apply
Institutions Missions and purposes	Mission and purpose of DIGAUE are clearly defined.	Mission and purpose of DIGAUE are not completely understood by all DIGAUE´s personnel.	It should be insisted on the diffusion and understanding of Mission and purpose of DIGAUE to attain a bigger commitment from the staff.	DIGAUE´s mission and purpose are defined clearly.	DIGAUE´s mission and purpose are not completely understood by all staff.	The creation of the Environmental Management and Risk Secretariat generates the opportunity to redefine DIGAUE´s mission and purpose inside the new Secretariat structure and functions.
Institutions Duties	It does not apply	It does not apply	It does not apply	DIGAUE´s organizational manual was elaborated.	There is little knowledge about DIGUAE´s organizational manual and there is possibly not enough staff which causes that some personnel takes over several roles.	The creation of the Environmental Management and Risk Secretariat generates the opportunity to redefine DIGAUE´s functions inside the new Secretariat which would produce an internal organization redefinition.
Institutions Communication/ information sharing	It does not apply	It does not apply	It does not apply	Operation records and data base are maintained.	Due to DIGAUE´s reorganization, there is not clarity about the information each department has nor the need to share it.	The elaboration and implementation of the repair and workshop warehouse control can improve information record and their use for other areas such as waste

Category/ Sub-category	Organization			Institution/social systems		
	Strength	Weakness	Opportunities	Strength	Weakness	Opportunities
						collection service cost calculation.
Institutions Personnel management (quantity, control, attendance)	It does not apply		It does not apply	DIGAUE has strengthened its organizational structure and staff control.	Personnel activities in DIGAUE´s office are concentrated in monitoring collection companies and there is not staff dedicated exclusively to projects such as education, recycling, and waste use.	The creation of the Environmental Management and Risk creates the possibility that personnel is assigned exclusively to projects such as minimization and 3Rs inside DIGAUE or Environmental Management area inside the new Secretariat.
Institutions Staff management (work conditions)	It does not apply	It does not apply	It does not apply	Employees have medical care and insurance packages with different Health Risk Management (ARS in Spanish); additionally, employees are protected by the Social Security Law with regards to temporary and permanent disability.	There is no evidence that preventive medicine is conducted due to the risk involved in working with wastes.	Project activities in the vehicle workshop allowed improvement with regards to occupational safety and health in the work site.
Community (citizen relations) Complaints				There is a culture to complain due to deficiencies in waste management or collection and there is an institutional channel to place them.	Complaints from citizens are analyzed by DIGAUE; they solved and used to feedback service quality.	After ADN´s financial problems are solved, better compliance by the companies can be demanded.
Community (citizen relations) Satisfaction to the services.	It does not apply	It does not apply	It does not apply	Customer satisfaction surveys are conducted frequently through a department inside ADN, Citizen Watch, which measures customer satisfaction in all services provided by the municipality.	It was not possible to get information about the progress of customer satisfaction survey with regards to waste collection service.	Survey outcome can be used to improve collection service quality.

Category/ Sub-category	Organization			Institution/social systems		
	Strength	Weakness	Opportunities	Strength	Weakness	Opportunities
Wastes collection and hauling Collection plan	There is a collection plan with routes and frequencies.	Routes and frequencies are complied completely due to deficiencies of the contractor.	As a result of overdue payment by ADN to the contractors and the procurement of new vehicles by them, it will be possible to demand higher compliance with regards to routes and frequencies by the contractor.	There is a collection system and a route and frequency plan.	The system door to door on the sidewalk which is used for waste collection in the National District demand the compliance of routes and frequencies and citizen cooperation for an adequate discharge. If all the foregoing is not satisfied then the city looks dirty.	The experience obtained during the waste adequate discharge pilot project can help to improve waste discharge in all the city, expanding the experience to other areas.
Wastes collection and hauling Public relations	There is a collection plan with routes and frequencies.	Waste collection routes and frequencies are not known by the residents and discharge rules are not complied.	Adequate discharge pilot project provided experiences which could help with regards to improve citizen relations and inform about adequate discharge schedule.	A pilot project for adequate discharge was conducted and experiences obtained with regards to relations with the citizens.	There is not a department dedicated to maintain citizen relations and education for waste discharge.	The creation of the new Environmental Management and Risk Secretariat generates possibilities for entities such as the Environmental Information Center to become involved with the adequate waste discharge project.
Wastes collection and hauling Wastes collection task management.	It does not apply	It does not apply	It does not apply	There are defined discharge and collection methods.	Discharge methods are not followed adequately by the residents and routes and frequencies are not complied completely by the contractors.	The outcome of the pilot project for adequate waste discharge and the creation of the new Environmental Management and Risk Secretariat generate possibilities for entities such as the Environmental Information Center to become involved with the adequate waste discharge project.
Wastes collection and hauling Vehicle management	There are 32 collection vehicles which are operated directly by DIGAUE.	DIGAUE´s collection vehicles are used preferably for big generators to supply deficiencies by private	In agreement with the information compiled, it continues the project to procure 20 new vehicles by DIGAUE which will	With the new purchase of collection vehicles by private contractors, there are sufficient vehicles for collection activities	Private contractors do not comply with providing vehicles with the capacity defined in the contracts.	Recent regular payment to private collection contractors can help to demand contract compliance.

Category/ Sub-category	Organization			Institution/social systems		
	Strength	Weakness	Opportunities	Strength	Weakness	Opportunities
		contractors.	improve the direct operation collection or coverage of deficiencies by private contractors. Recently, 3 new collection vehicles were procured.	by private contractors.		
Wastes collection and hauling Vehicle maintenance	DIGAUE has 32 collection vehicles which should be provided maintenance.	Resources are limited for spare parts procurement which jointly with the proceedings, increases the time a vehicle remains in the vehicle workshop.	The outcome of the Project in organizing the vehicle workshop can help to provide timely resources and spare parts through the record of repairs and warehouse control.	There is a vehicle workshop for vehicle maintenance in DIGAUE.	The workshop has deficiencies with regards to tools and equipment.	The modifications in the facilities and the outcome of the Project in the vehicle workshop can help to overcome problems related to the organization, operation records, and training for repairs of the electricity and electrical system.
Street sweeping Wastes treatment Cleaning plan / work	It does not apply	It does not apply	It does not apply	It does not apply.	It does not apply	It does not apply
Street sweeping Wastes treatment Waste haulage data management	It does not apply	It does not apply	It does not apply	There is a transfer station.	The operation of the transfer station has deficiencies in infrastructure and operation.	In IDB study about waste management for Great Santo Domingo Mancomunidad, it can be defined the construction of a new or transfer station system for several municipalities in the Mancomunidad.
Street sweeping Wastes treatment Wastes treatment plan / work	It is operating a pilot project for pruning waste chipping.	There is not so much experience in the treatment and use of organic waste.	The pruning waste chipping pilot project can provide experiences and promote facilities to make use of organic waste in the National District.	It does not apply	It does not apply	It does not apply
Street sweeping Wastes treatment Waste pickers	It does not apply	It does not apply	It does not apply	It does not apply	It does not apply	It does not apply
Street sweeping	It does not apply	It does not apply	It does not apply	It does not apply	It does not apply	It does not apply

Category/ Sub-category	Organization			Institution/social systems		
	Strength	Weakness	Opportunities	Strength	Weakness	Opportunities
Wastes treatment Hazardous wastes						
Recycling Recycling activities	It was conducted a paper recycling pilot project which provided experiences about educational activities and proceedings for recovered material storage and transport.	The outcome of the paper recycling pilot project was limited with regards to the amount recovered.	It should be taken advantage of experiences and knowledge obtained during the paper recycling pilot project to promote this activity in the National District through the expansion of this project to other schools, areas, and facilities.	There is a section in DIGAUE directed to promote recycling which is called Recycling Promotion Center.	Recycling Promotion Center staff in DIGAUE is also involved in other activities, consequently, time dedicated to promote recycling is limited.	The creation of the Environmental Management and Risk Secretariat and the outcome of the pilot project will allow the Recycling Promotion Center and the Environmental Information Center to increase their activities to promote recycling and account with dedicated staff exclusively for such activities.
Recycling Recycling markets	There are incipient recycling activities in the National District; consequently, it is inferred that there is market for recycled materials.	There is not sufficient knowledge about recyclable materials market and their price depends on the international market.	Recycling Promotion Center elaborated a census of recyclers in the National District during this Project which will facilitate knowledge about recycling market in the National District.	There is a market for recyclable materials.	The trade chain for recyclable materials is informal and there is no record of companies formally established.	The Recycling Promotion Center elaborated a recycler's census in the National District during this Project which will facilitate to obtain knowledge about recycling market in the National District.

a Core capacity assessment or basic capacity of the counterpart team

In the Capacity Assessment Handbook (CAH) published by JICA Research Institute points out that the "will, attitude, leadership, and management capabilities to activate technical capacity are referred to as Core Capacity" and this capacity should join with technical capacity and enabling environment because "Capacity only comes about once these three elements have been integrated."

Unfortunately, the CAH does not provide many examples of instruments to measure core capacity; however, it mentions that "rather than being a manual that is to be strictly applied, this handbook presents perspectives that those involved in cooperation projects should share and hold onto in order to examine methodologies suited to local realities."

In other documents about capacity assessment or about "competencies", these types of capacities are called "attitude capacities" because they refer to attitudes from the person facing some circumstances which can lead to successful projects.

Regarding this same issue, some capacities are shown next which are considered fundamental in the counterpart team to attain the objectives in the Development Project.

Leadership	Capacity to head and direct projects; personnel working for her/him follow her/his directions and initiatives. Social or institutional acknowledgement of his/her capacity of leadership.
Management	Capacity to conduct steps/procedures, obtain resources, present projects, and obtain authorizations, etc.
Initiative	Capacity to propose alternative actions, present possible solutions, find new fields for application for projects, etc.
Collaboration	Capacity to work in a team, to conduct projects jointly with other departments, to share information and resources, etc.
Compromise	Capacity to choose solid waste field over other professional fields to carry out his/her activities with passion and enthusiasm, etc.
Organization	Capacity to organize processes and activities in the projects to distribute/organize tasks or activities to classify and process information, etc.

G.2.5 Core capacity assessment for counterpart team 1 "Solid waste management"

Capacity	2011 Assessment	2012 Assessment	Recommendations
Leadership	The counterpart team 1 is under the leadership of DIGAUE´s director, José Miguel Martínez Guridy, who has great capacity and is respected not only due to his institutional ranking, but also to his knowledge in solid waste management and ability to direct activities in his Bureau. This acknowledgement is extensive not only inside DIGAUE, but also in ADN and other Municipalities in the Dominican Republic.	In the core capacity assessment conducted in 2011, it was pointed out the leadership capacity of counterpart team 1 was sufficiently developed and lied upon Mr. José Miguel Martínez Guridy, the counterpart team leader. Recently, Mr. José Miguel was appointed as Environmental Secretary in the ADN, however, urban cleansing and waste management are still under his new responsibilities.	It is reiterated what has been pointed out in 2011 related to the fact that it is not required important support from JICA team to strengthen the Project´s objectives with regards to leadership inside counterpart team 1. However, it is convenient to consider that the change of leadership at DIGAUE can cause problems to strengthen the project´s objectives, taking into account the different

Capacity	2011 Assessment	2012 Assessment	Recommendations
	Team 1, and the General Director particularly, can exert leadership to review the Master Plan which is the main activity by counterpart team 1 in the Development Project and to implement the solid waste revised M/P in the ND.	Consequently, it is considered that leadership will continue in the counterpart team and it is reiterated the assessment conducted in 2011 with regards that this capacity is sufficiently developed in counterpart team 1.	leadership styles between Mr. José Miguel Martínez and Mr. Oscar García.
Management	Both counterpart team leader and other team members have sufficient capacity to conduct necessary management to revise the Master Plan and present to superior authorities the revision progress and results.	With the appointment of Mr. José Miguel Martínez as Environmental Secretary in Santo Domingo Municipality, it is strengthened the management capacity in counterpart team 1 which creates better conditions to strengthen the objectives attained.	In spite of increment of management capacity, there are limitations of financial resources to comply the requirements which are foreseen for solid waste management in the revision of the Master Plan; consequently, it is reiterated the 2011 recommendation that is should be presented with clarity to higher rank authorities the needs which are derived from the Master Plan revision, with the purpose to agree the creation of conditions which will make possible their compliance in terms foreseen in the Master Plan revision.
Initiative	The training which has been received by counterpart team 1 members during the implementation of the Project allows that alternative solutions are proposed to solve problems presented in solid waste in the National District which can be included in the revised Master Plan.	It remains the same assessment as 2011 with regards to core capacity of initiative by counterpart team 1 members of the Project.	The experience obtained by counterpart team 1 members of the Project, for sure, will produce that the objectives and goals proposed in the Master Plan revision are defined based on realistic principles with regard to the compliance possibilities.
Collaboration	Counterpart team 1 has good working relationships with other areas that can have important roles in the future implementation of the revised Master Plan, such as the Environmental Information Center and the General Bureau for Human Development.	Mr. José Miguel Martínez appointment as Environmental Secretary will make possible to improve coordination and cooperation with other areas related to waste management such as Environmental Information Center and the Department of Environmental Management.	It is not considered necessary to make comments on this issue.
Commitment	All counterpart team members show great commitment with solid waste and with the activities which are performed by	It remains the same assessment as 2011 with regards to core capacity of initiative by counterpart team 1 members of the	It is not considered necessary to make comments on this issue.

Capacity	2011 Assessment	2012 Assessment	Recommendations
	DIGAUE; consequently, activities to review the Master Plan and the commitment for future implementation of the revised Master Plan can be considered adequate.	Project.	
Organization	Counterpart team 1 members have adequate organizational level of activities which are conducted in their respective working areas; consequently, it can be expected that they can support with data and information required to review the Master Plan.	In spite that there is an adequate organizational level in DIGAUE´s activities, there has not been created any organizational entity which corresponds to the activities which were undertaken in the Project, such as those related to 3Rs and improvement of Vehicle Workshop operation.	It is advised to make formal those organizational structures which implemented the pilot projects during this Project, such as "Recycling Center" and Pruning Waste Chipping because, in fact, they operate, but it has not been created any formal structure for their operation nor there is any regulation that created such structure. Similarly, it has not been defined any clear organizational structure in the vehicle workshop, in spite that some activities are conducted as part of the Project, it has not become formal any of those structures nor defined the responsible persons who conduct such activities. This situation is considered a risk to strengthen the achievements attained during the Project because the activities which are being conducted currently depend on the instructions given by the chief, time availability, and resources by those who implement them; consequently, these activities can stop their implementation if chiefs are removed, if priorities change or resources are reduced.

G.2.6 Core capacity assessment for counterpart team 2 about "Solid Waste Education and Awareness Raising"

Capacity	2011 Assessment	2012 Assessment	Recommendations
Leadership	The counterpart team 2 is headed by Leomaris Henríquez who has received training by JICA team and has leadership capacity to develop the pilot projects included in the Project.	It is reiterated the 2011 assessment regarding the leadership capacity by Leomaris Henríquez in counterpart team 2 for this Project.	The leadership capacity has been sufficiently developed in counterpart team 2 during the Project; consequently, it has been guaranteed the continuity of achievements attained by the

Capacity	2011 Assessment	2012 Assessment	Recommendations
	Another counterpart team member who also has leadership is Pablo Mejía who has received a lot of training during the Project, mainly during all visits which Mr. Mejía has participated outside Dominican Republic.	Moreover, it should be noted that Pablo Mejía developed remarkably his leadership capacity in the last year of the project, replacing successfully the absence of Leomaris Henríquez and taking over the leadership of counterpart team 2 during almost half year.	Project and expansion of pilot project for adequate waste discharge to other areas of the city.
Management	The implementation of adequate discharge pilot project shows that the counterpart team 2 has an adequate management capacity.	Counterpart team 2 showed adequate management capacity to develop pilot projects for adequate waste discharge, but for that purpose accounted with the cooperation of other member of DIGAUE who are not formally part of the project. Additionally, in the last year Massiel Moronta stopped working at DIGAUE who participated in counterpart team 2 and other members who originally integrated part of this counterpart team never participated in any activity. Due to these reasons, it is considered that counterpart team 2 has limited management capacity.	Taking into account that there are very few members in the counterpart team 2 and that they work in different areas inside DIGAUE, there is the risk that the pilot project for adequate waste discharge is not expanded to other areas in the city or this expansion is not conducted in the short term. It is recommended to reinforce the team responsible for the expansion of adequate discharge project, possibly with personnel from Environmental Information Center, and the implementation of another organizational entity inside DIGAUE which would be in charge of the expansion for adequate discharge because it is very important to improve cleansing conditions in the city.
Initiative	There is an initiative to conduct environmental educational activities in the pilot project for adequate waste discharge; mainly, taking into account that they are activities that had not been conducted previously and had to be innovated with the support of JICA team.	In spite of the limitations in the number of members of counterpart team 2 for this project, Leomars Henríquez and Pablo Mejía have shown initiative to expand the pilot projects to other areas in the city; consequently, it is considered that team 2 satisfactorily fulfills the item of initiative for this assessment.	It is not required to make any remark on this issue.
Collaboration	The counterpart team has achieved the collaboration of the Environmental Information Center (CIA-ADN in Spanish) and General Bureau of Human Development (DGDH in Spanish) to conduct the pilot project for adequate waste discharge; as a result, it is considered adequate the capacity in this field.	Cooperation is essential to expand the pilot project for adequate waste discharge to other areas in the city because DIGAUE does not have enough legal capacity to call on the Neighbors Committee nor enough budget to elaborate environmental training materials. With the creation of the Environmental Secretariat, it is practically guaranteed the participation of the Environmental Information Center for the expansion of the project and it facilitates the cooperation of the Human Development General Directorate; consequently, cooperation with counterpart team 2 has been strengthened.	The creation of the Environmental Secretariat is practically guaranteed the participation of the Environmental Information Center for the expansion of the project and facilitates the cooperation of the Human Development General Directorate. However, care should be taken to obtain the support of the Environmental Secretariat for the cooperation to be conducted effectively.

Capacity	2011 Assessment	2012 Assessment	Recommendations
Commitment	In general, counterpart team members who belong to DIGAUE show a good degree of commitment with environmental education activities for adequate solid waste management, however, the same cannot be said of counterpart team members who do not belong to DIGAUE. This can be observed in the lack of participation in evaluation activities which have been conducted.	Members of counterpart team 2 keep a solid commitment with the expansion of adequate waste discharge project, but it is required that they also have the support from both DIGAUE´s directorate and the Environmental Secretariat because, by themselves, they will not be able to expand the pilot project to other areas in the city.	It is required a firm support to counterpart team 2 to achieve that the adequate discharge pilot project is really expanded to other areas in the city. Consequently, it is very important that DIGAUE´s directorate and the Environmental Secretariat evaluate sufficiently the importance of adequate waste discharge to improve collection conditions in the National District.
Organization	It has been shown an adequate level of organization by the counterpart team 2 for the implementation of the pilot project, mostly by DIGAUE personnel; however, it seems it is not the same with counterpart personnel who does not belong to DIGAUE where lack of commitment has been observed.	Members of counterpart team 2 have adequate organizational level in their activities, but they do not account with organizational structure to implement environmental educational activities nor the expansion of the pilot project to other areas in the city. It is important to consider the need to generate an organizational structure which would be in charge of environmental education on solid waste management and adequate waste discharge for collection service. This structure can be located inside DIGAUE or inside the Environmental Information Center which is now under the jurisdiction of the Environmental Secretariat.	It is suggested to consider the creation of an organizational structure which would be in charge of environmental education on issues related to management and adequate waste discharge, either inside DIGAUE or the Environmental Information Center.

G.2.7 Core capacity assessment for counterpart team 3 about "Vehicle Maintenance Management"

Capacity	2011 Assessment	2012 Assessment	Recommendations
Leadership	Counterpart team 3 has the leadership of Oscar García in administrative and control issues and Manuel Roa in technical issues for repairs.	It is reiterated the leadership of Oscar García on general issues in the workshop and Manuel Roa on technical repair issues.	With the recent appointment of Oscar García to lead DIGAUE, most certainly, his new responsibilities will force him to appoint another general responsible person in the vehicle workshop and this can imply leadership difficulties because Manuel Roa has technical capabilities, but it is not guaranteed a general leadership and control, whereas Genaro Antonio Rosario and Luis Antonio Checo have more administrative experience, but do not have necessary technical capabilities to exert general leadership in the vehicle workshop.
Management	It has been obtained the management capacity for the procurement of spare parts to repair collection vehicles. JICA team has	It has been improved management for spare parts procurement, but there are financial limitations. It is possible that with Mr. Oscar García appointment as DIGAUE´s director,	The appointment of Mr. Oscar García as DIGAUE´s director increases the management capacity of counterpart team 3 for procuring spare parts, however, it reduces the

Capacity	2011 Assessment	2012 Assessment	Recommendations
	supported identification of spare parts and manner to procure them. Management capacities to obtain resources to procure spare parts by means of bidding are delayed and should be approved by higher ranking officers.	it will be increased the management capacity of counterpart team 3 for the procurement of spare parts. Genaro Antonio Rosario and Luis Antonio Checo have experience and management capacity to procure spare parts.	attention paid to vehicle workshop due to his new responsibilities; consequently, a new responsible for the vehicle workshop will be appointed for sure.
Initiative	Counterpart team members have sufficient initiative to solve technical issues regarding vehicles´ repair; however, there is little initiative to pay attention to vehicle workshop management control issues.	It is reiterated assessment for 2011 regarding the capacity for initiative by counterpart team 3 related to technical issues on vehicle repairs, however, there is not sufficient initiative yet with regard to administrative issues and management control.	It is required to motivate the initiative by counterpart team members on administrative issues and control of operations in the vehicle workshop.
Collaboration	There is not knowledge that there are problems related to cooperation between vehicles workshop and DIGAUE.	Recently, problems were detected regarding internal cooperation among different areas in the vehicle workshop, particularly, between the area in charge for collection vehicle maintenance and the area responsible to repair other vehicles. Similarly, problems were also identified during the cooperation by the area in charge of providing maintenance to collection vehicles with other municipalities which also have small collection vehicles donated by Japan.	It is required to motivate cooperation among different areas in vehicle workshop to favor the exchange of experiences and cooperation with other municipalities which also have problems to repair small collection vehicles donated by Japan.
Compromise	Counterpart team members are sufficiently committed with vehicle workshop conditions improvement. It is not completely understood importance of repair control tools.	It is reiterated 2011 assessment regarding the capacity of initiative by counterpart team 3 related to the commitment with general vehicle workshop improvement, but this commitment is limited to issues specifically related with its responsibility area and lack of commitment with general vehicle workshop improvement.	It is required to motivate the general commitment by all counterpart team 3 members for this project with the overall vehicle workshop improvement going beyond any particular interest for improvement in the workplace for each one of the counterpart team members.
Organization	Vehicle workshop organization is limited and empirical. Vehicle workshop operation control system is just beginning to be implemented. JICA expert team has been important on this issue.	The vehicle workshop internal organization has been improving slowly and even though there are still some different positions between the personnel who previously belonged to DIGAUE and the one who belonged to Equipment.	It is still required support by JICA to improve administrative and organizational conditions in the vehicle workshop with the objective that improvements attained in vehicle workshop operation continue after the Project is finished. It is possible that by the end of the project, it will still be required support by JICA to strengthen the achievements of the project, possibly by dispatching senior volunteers with collection vehicle repair experience, vehicle workshop organization, and vehicle repair management control.

G.2.8 Core capacity assessment for counterpart team 4 about "Waste Minimization /Promotion of 3Rs"

Capacity	2011 Assessment	2012 Assessment	Recommendations
Leadership	Counterpart team 4 had a leader on Heisor Arias; however, his temporary long departure from DIGAUE poses the question on whether Ana Pou could exert leadership on the counterpart team, recycling activities, and use of organic wastes.	Ana Pou increased her capacity and replaced adequately Heisor Arias´ leadership during the last year of the project. Similarly, Pablo Mejía and Amancio Pereyra also increased their capacity and showed leadership in their respective responsibilities in team 4 for this project.	Leadership in team 4 for this project is guaranteed, but it is of concern that there are very few persons in counterpart team 4 who can take over leadership roles completely. It is suggested to increase personnel who will be dedicated to activities related to waste minimization and 3Rs promotion when the project finishes.
Management	The implementation of recycling paper pilot project shows counterpart team 4 has adequate management capacity.	Heisor Arias´ absence during the last year in counterpart team 4 for this project reduced management capacity, but it mainly is considered that the large amount of activities were developed to strengthen the outputs of the pilot projects during this Project. On the other hand, the appointment of José Miguel Martínez as Environmental Secretary will increase management capacity for counterpart team 4 of this Project.	It is reiterated 2011 assessment in the sense that management capacity by counterpart team 4 is not sufficient for recycling activities and organic waste use which is required to expand the pilot projects developed during this Project and goals defined for 3Rs in the Master Plan revision. This circumstance should be considered at the end of this Project in order to guarantee strengthening the objectives attained.
Initiative	Most certainly that during implementation of paper recycling and prune waste management pilot projects, initiative by counterpart team members has been exposed, but it is going to require more initiative to expand the scope of recovering and use of wastes by the end of the project.	It is reiterated 2011 assessment with regards to initiative by team 4 members for this Project.	It is not considered necessary to make comments on this issue.
Collaboration	It was achieved the collaboration from the Environmental Information Center and General Bureau for Human Development to implement recycling paper project and from the authorities in Park Mirador Sur to implement prune waste shredding. However, it should be taken into account that expansion of 3Rs activities will require an extended collaboration from different entities in ADN and other social sectors.	The appointment of José Miguel Martínez as Environmental Secretary increases the capacity of cooperation by counterpart team 4 with other areas of the ADN which cooperation is indispensable and will be under the jurisdiction of the new Environmental Secretariat.	It is not considered necessary to make comments on this issue.
Commitment	Ana Pou and Amancio Pereyra have shown remarkable commitment with recycling activities and use of waste; however, it has not been shown sufficient commitment from new counterpart team members.	In agreement with reports received in the last year, it was increased remarkably the commitment by Fulvio Cabral, Alan Alarcón, and Fernando Prestol with the objectives of this Project related with the promotion of the policies	It is suggested to strengthen the interest and commitment by Fulvio Cabral, Alan Alarcón, and Fernando Prestol with the activities and policies of the 3Rs.

Capacity	2011 Assessment	2012 Assessment	Recommendations
		related to 3Rs.	
Organization	Counterpart team members are organized in their activities, but the Center for Promotion of Recycling does not have a defined structure defined nor personnel dedicated exclusively to their activities.	It is reiterated 2011 assessment for the Center for Recycling Promotion and pruning waste chipping project with regards that they do not have institutional organizational structure dedicated exclusively to these activities.	By the end of this Project, it is required to insist on the convenience that the Center for Recycling Promotion and pruning waste chipping project have a definitive institutional organizational structure and permanent and exclusive staff. This can offer more guarantee that 3Rs activities are maintained by the end of this Project and it is taken advantage of capacity development provided by JET in this field.

H Third Country Training

Report from the Third Country Training is shown below (prepared by the C/P):

H.1 Argentine

Monday, November 09 2009, 10:30 a.m.
Courtesy Call to the Provincial Organism for Sustainable Development (OPDS by its initials in Spanish)

We visited the office of Lic. Ana Corbi, Provincial Executive Director of the Organism for Sustainable Development that regulates all aspects related with Sustainable Development of Buenos Aires Province.

During the meeting, Lic. Corbi explained the existing regulatory framework and the powers of her office in the solid wastes management in the Province.

Lic. Ana Corbi, Executive Director of OPDS, while sharing her experiences on the executions carried out in Buenos Aires Province oriented to Integrated Management of Urban Solid Wastes (IMUSW) (GIRSU in Spanish).

Among the most important aspects discussed during our visit, were the revision of the regulatory framework and the experiences of the OPDS in the management of agreements between the municipalities of Buenos Aires Province.

The topic of regional landfill is dealt in the discussion, which in our case it is discussed through the Mancomunidad Del Gran Santo Domingo, with the cooperation of Inter-American Development Bank (IDB).

Monday, November 09 2009, 02:00 p.m.
Visit to the closed landfill of Villa Dominico (administered by CEAMSE)

CEAMSE (Ecological Coordination of Metropolitan Area of State Society) was created in 1978 as an alternative to the uncontrolled growth of open dumping sites and air pollution generated by the burning of thousands tons of industrial and household waste. The old chimneys of the buildings were disappeared and the wastes collection was organized. It is a union between the Buenos Aires City Government and the Buenos Aires Province Government.

The Villa Dominico landfill began operating in 1978, it occupies 400 hectares covering the municipalities of Avellaneda and Quilmes, and for a nearly quarter century it received approximately 47,660,000 tons of household wastes generated by the local inhabitants of the municipalities of Berazategui, Avellaneda, Quilmes, Almirante Brown, Florencio Varela, Lanús y Lomas de Zamora.

The CEAMSE officials said and showed us that, after its closure in 2004, due to social pressures exerted by the Buenos Aires Civil Society for the alleged mismanagement of the landfill, they continue working on programs consisting in monitoring the superficial and groundwater, gases collection and treatment (there is a company that burns the gas through the CDM project), and the leachate capture and treatment (leachate treatment plant by coagulation and flocculation), as well as the conservation of the liner covering the wastes, drainages, runoff and road plot, and the cut of grass of the modules.

In addition to this, the CEAMSE has made the work of forestation and park development in the filled areas, using plants grown in a nursery that exists on the site, in order to give back to the community cared for and recovered an area for use by its neighbors.

Within the closed landfill there is a Station to receive visits by neighborhood associations, schools and other community agencies interested in knowing about the Villa Dominico Landfill Closed down.

This trip showed us the planning exercises of the landfill closure and utilization of the land as parks and forestation areas to the community, which would be a theme to be addressed by the Mancomunidad Del Gran Santo Domingo in about 10 years that is when Duquesa landfill life ends.

Tuesday, November 10 2009, 10:00 a.m.
Visit to Colegiales Transfer Station (administered by CEAMSE)

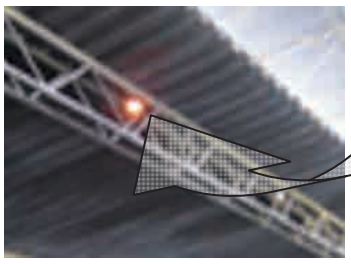
The Colegiales Transfer Station was built in 1979 by the company Ecological Coordination of Metropolitan Area of State Society (CEAMSE) in an area of one hectare and a half, which is located in the Colegiales area of the Autonomous City of Buenos Aires.

Currently, on the outskirts of the facilities are houses, apartment buildings and some businesses that, by their nature can be classified as a residential area of upper middle social class. According to the explanations given by officials of CEAMSE, they have only received some complaints from the housing projects located in the rear to the transfer station, corresponding to the exit area of the transfer station.

Colegiales Station operates continuously for 24 hours each day and receives an average of approximately 2,000 tons per day of urban solid wastes discharged into hoppers with a facility of compaction by a hydraulic piston when introducing the waste containers which transport them to the final disposal site.

Two weighbridges are installed in the front of the station, one for entrance and one for the exit. A weighbridge control office is located between them. Upon reaching the station, vehicles are weighed in the entrance weighbridge and are identified by a radio frequency system. The weighbridge control operator has a computerized system to display the data of the vehicle and its weight. With this information, they issue a weight ticket that indicates the net weight of wastes using the tare system.

After control and weighing, collection vehicles move to the upper floor to unload the waste. There, waiting for the station staff indicating them the place where wastes must be unloaded. For this, it is used a system composed of a sound signal and a set of lamps mounted above the hoppers, a light is switched on in the position indicated by the operator. In this way, it is indicated to the driver when and where they should download.



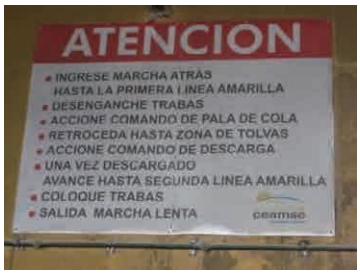
The station has four hoppers to receive and route the wastes to the transporting containers located on the lower floor. The main discharge system consists of a set of two central hoppers of 12 meters long combined with two thrust systems into the pits. Vehicles discharge wastes into the hopper and from where the wastes is pushed by the pistons located on the lower floor to compact them into containers.



In addition to this main system, the transfer station has two hoppers located at left and right ends to receive the waste directly, without compacting to the trucks of open boxes.

Wastewater and leachate generated during the operation are carried by gravity through a system of ducts that lead to a small treatment plant with capacity of 20 m³/day and peaks of 30m³/day, to render them harmless before to be downloaded into the public sewer system sewer.

In general terms, we appreciated that the Colegiales transfer station was designed, built and managed appropriately. It has adequate operating procedures, safety standards and reduced environmental impact.





But it would be appropriate to assess whether the investment cost of the acquisition, operation and maintenance of the piston system is worthwhile for the efficiency given by the additional compaction of the waste.

Moreover, we did not understand the reason for using the tare system with entrance weighing because the station has a scale at the vehicles exit.

In conclusion, we believe that the experience of visiting the Colegiales transfer station allows us to identify the following opportunities for improvements that can be incorporated in the Urban Solid Waste Management of National District, either in the transfer station currently operating in Villas Agricolas or other transfer stations to be built in the future.

Install a radio frequency system for Identifying vehicles

- Establish procedures for organizing the existing discharge hoppers
- Reinforce safety rules
- Install a water spray system in the hoppers to precipitate the dust particles that are dispersed at the time of discharge
- Evaluate the possibility of installing a water treatment plant.

Tuesday, November 10 2009, 02:00 p.m.
Visit to Norte Tres Landfill (administered by CEAMSE)

The final disposal site Norte Tres is a sanitary landfill, since it has all controls on leachate, gas, daily soil coverage, geo-membrane to prevent percolation and adequate distribution of cells. This landfill is the largest in Argentina, and receives approximately 15 thousand tons daily.

As positive observations and lessons, we state the following:

- The CEAMSE made agreements with a private company through a proposed Clean Development Mechanism for extracting, incinerating and use of methane (CH4) that is generated from anaerobic decomposition, in which the firm contracted to sell Reduced Emissions Certificates or green bonds, as set out in the Kyoto Protocol.
- Within the site there are several private separation plants and one social plant that is managed by the landfill organization. The latter does not make a significant minimization of wastes, therefore, as the landfill officials told us that it is more focused on the social aspect than the profitability.
- The Norte Tres landfill is certified by ISO (International Standardization Organization) in Quality Management Systems (ISO 9001: 2000) and System of Environmental Management (ISO 14000: 2004), facilitating the orderly development of the landfill, since these rules require to plan and Implement all procedures for activities that are held there.

- There are two Tippers in order to lift the large trucks that does not have system of thrust or living floor, since they were modified to increase load capacity.
- There is a leachate treatment plant with a capacity of 500m^3/day, and once the water is treated it is used for spraying on roads within the landfill.
- There is a composting plant within the site that processes about 2,000 tons/month of pruning wastes. Here, we saw processes of shredding, fermentation and maturation of compost. Then the final product is returned at no cost to municipalities for their use in public areas.

After 120 days process, 40% of total pruning wastes brought into the operation remains as compost.

The CEAMSE charges a differentiated fee for the disposal of pruning wastes, that is AR$ 35 (US$ 9.23) per ton, and for common wastes the fee is AR$ 40 (US$ 10.75) per ton.

As weakness and at the same time as the social component of process of Norte Tres regional landfill, officials of this site tell us that the operation has to stop for 2 hours to allow entry to landfill for waste-pickers that go to the work front to separate recyclable materials for sale afterwards. Obligation is accomplished by the administration, as there is a court ruling in favor of the waste-pickers (cartoneros), saying it cannot be buried something that is someone's living mode.

The CEAMSE (union of Buenos Aires city government and the Buenos Aires Province) is a good example of partnership between different levels of government for the installation and operation of landfills used by different municipalities, which could be replicated in our country in different regions, and once Duquesa landfill, the landfill the Mancomunidad del Gran Santo Domingo uses, ends its service life.

Wednesday, November 11 2009, 08:30 a.m.
Courtesy Call to Sub-secretariat of State of Environment of Campana Municipality

We were greeted by Stella Maris Bonaventura, sub-secretary of Environment of the Camapana Municipality and Raúl Vota, Erica Volpi y Analía López, staff of Area Environmental Prevention and Education Section.

Professor Raúl as he presents part of the exhibition.

During this visit, they explained to us the Plan for the Reduction of Municipal Solid Waste (MSW) (RSU by its initials in Spanish) for Campana and Zárate municipalities, elaborated within the framework of an agreement signed by the Provincial Organism for Sustainable Development (OPDS by its initials in Spanish) with the Japan International Cooperation Agency (JICA) and they presented a summary of the pilot project for the separation of solid wastes that has been carrying out very successfully from 09 December 2008 in the areas of Ariel del Plata and Dalmine

According to information provided by officials of the Campana Municipality, the MSW Reduction Plan aims at strengthening the administrative and management capacity for designing and implementing various actions (awareness campaigns and environmental education, development pilot exercises, etc.), to perform the source separation, recovery, reuse and recycling of municipal solid wastes, and gradually reducing their amounts destined for final disposal to achieve a reduction of 30% in 5 years.

In this sense, the scheduled tasks are:

- Perform Baseline study for the management of MSW in Zarate and Campana.
- Get on MSW field training in Zarate and Campana.
- Receive training in Japan to learn about "3Rs".
- Develop Preliminary Plans for MSW Reduction in Zarate and Campana.
- Organize seminars and workshops for the dissemination of MSW Reduction Plan.
- Implement MSW Reduction Plan as a pilot project.
- Periodically evaluate the results of the pilot project to develop the plans to reduce individual and common MSW.
- Formulate the Base Model for MSW Reduction Plan.
- Prepare the Manual for Promoting MSW Reduction Plan.

The results obtained between December/2008 and August/2009 indicate that approximately 85.7% of homes discharge the waste properly and recovered an average of 580 kilograms of recyclable waste per week, recording the maximum value of 885 kilograms period, recovered during the first week of March/2008 and a minimum of 370 kilograms in the second week of June/2008.

Considering that Ariel del Plata, an area in which was carried out the initial part of the pilot project, has 400 homes and an estimated population of 1,568 which together generate about 7,683 kilograms of wastes per week, we can qualify it as a successful pilot project, because in just 11 months has managed to maintain a recovery rate near 7.55% of waste generated.

However, this figure is far from the stated goal that aims to achieve a 30% reduction in the amount of MSW deposited in final disposal, although it is important to recognize that so far the efforts have been directed only to the separation at source and would lack to work in citizen education to promote the reduction and reuse of wastes.

Wednesday, November 11 2009, 10:00 a.m.
Courtesy Call to Mayor of Campana

Stella Maris Giroldi, Mayor of the Campana Municipality, Buenos Aires Provience, Argentina; Exchanged gifts with Oscar García, an oficial of the Municipality of Santo Domingo de Guzman, National District, Dominican Republic.

Wednesday, November 11 2009, 11:00 a.m.
Visit to Dante Alighieri School Located at the Sector of Dálmine Viejo

Accompanied with the staff of education and public awareness of the Sub-Secretariat of Environment of the Municipality, we visited the Dante Alighieri School, a private institution of great prestige and tradition in Italian language teaching in Argentina, which is located in the community of Dálmine Viejo, a high class area of the Campana Municipality.

There, we talked with the staff of the Directorate of School, teachers and pupils, of whom we receive details and explanations of their participation in the proposed municipal solid wastes separation.

Students carried out the promoters work in its sector by informing the project to the municipal inhabitants, delivering them informative material and bags for the first month of the project.

During the visit, we were informed that at the start of the public awareness activity, some houses do not opened their doors, because they understood it was to sell a product, so they had to leave the informational material below the door, but then these people became interested in the project and now are making efforts to wastes separation.

Wednesday, November 11 2009, 02:30 p.m.
Visit to the Final Disposal Site of Campana y Zarate

As we saw in this visit, the final disposal of household wastes of Campana and Zarate is a very complicated issue to be settled by both municipalities, as they still have an open dump located in the Partido de Zárate does not abide by existing environmental laws.

In this sense, officials of the Directorate of Environment of Campana said that they are working to change the conditions of the current disposal site.

According to estimates by the staff of the Campana Municipality, about 200 tons of solid wastes are deposited daily at this landfill, which are not weighed, due to the lack of a weighbridge on the site.

The site is on a private land and it can be seen a lot of wastes scattered in the open dump, showing a lack of regular coverage on layers of waste disposed of.

There is a materials recovery operators association in the site, that informally separates the different recyclables.

As a positive point, on Tuesdays of each week, the recyclable waste collected from sectors where separation projects are carried out are disposed in a special place at the site, so that in this way the waste-pickers get a clean recyclable.

The recyclables are sold to intermediaries, and later to companies that manufacture them for export or use them to make raw materials and/or new products.

Wednesday, November 11 2009, 07:00 p.m.
Visit to Promotion Society of Ariel Del Plata

We participate in a meeting with the Society for the Promotion of Ariel del Plata, a sector of the Campana Municipality in which we share experiences with citizens, who are part of the Separation Pilot Project of Urban Solid Waste, where on Tuesday take the recyclable wastes out in black bags .

This project was an initiative of the Secretariat of Environment in coordination with the Japan International Cooperation Agency (JICA) and the Provincial Organism for Sustainable Development (OPDS by its initials in Spanish), members of these institutions convened a meeting with the Society of Promotion of Ariel de la Plata to present the project and the importance that of neighbors endorses the program.

Since the beginning of the project it has been implemented an awareness and education campaign on the importance of waste separation program through television, radio, newsletters, speakers and more.

Early in the Project, members of the Society for the Promotion of Ariel de la Plata organized the delivery of newsletters and bags donated by the Toyota Enterprise that joined to the project to help incorporate new habits in the public and implement the project as first experience in the history of the town of Ariel de la Plata.

Two months after project implementation, the Sub-Secretariat of Environment informed through a newsletter the monitoring results from the recyclable materials discharge in the pilot project, with data on how many households of the sector discharge properly the wastes, and how many households do not make proper discharge, and households that do not comply with the provisions of the project are then visited by staff of the Secretariat of Environment, in order to know the reason why they are not integrated to the project.

According to a newsletter with weekly monitoring results for Dec/08 - Aug/09 of the Secretariat of Environment, 85% of the residents of Ariel de la Plata participate successfully in the separation of recyclable wastes. What drove the expansion of the project to Dálmine sector to join efforts to reduce the amount of daily waste reaching the final disposal site.

However, The Society of Promotion of Ariel de la Plata requires of the Secretariat of Environment of the Campana Municipality to mediate with the Authorities of the Municipality to manage the construction of sports grounds, playgrounds, work schools, street repair, beautification of the sector, among others, as a bonus or pay for additional costs to be incurred by residents for the purchase of black bags for their hard work and behavior change being made for the separation at source and delivery of differentiated recyclable waste removed only on Tuesdays.

This visit will be our experience to replicate successful measures applied by the Authorities of the Campana Municipality and anticipate the actions to be taken to prevent possible claims for compensation that the residents can raise in areas that we will select for the implementation of similar campaigns in Santo Domingo de Guzman.

Thursday, November 12 2009, 09:00 a.m.
Environmental Education in Schools

We participate in the presentation of an awareness raising activity, addressed to the kindergarten students, where children exchanged ideas on how to handle solid waste in their homes.

Dynamics was performed to teach children to identify which wastes are Recyclables and which are Non-Recyclables to motivate them to differentiate one another at the time of taking the wastes to the wastebasket.

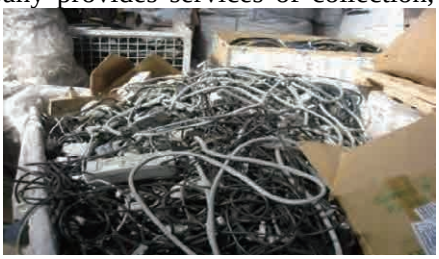
Image of students in 8th grade watching a video of Homero Simpson, who managed to win the election for mayor of the municipality, but by improper solid waste management and the lack of awareness of municipal inhabitants, his management, was traumatic for all municipal inhabitants.

Thursday, November 12 2009, 02:00 p.m.

Visit to Silkers company (Management of e-scrap or Electrical and Electronic Materials Wastes)

During the visit to this enterprise, Lic. Gustavo Fernandez Protomastro explained to us that the no more use electrical and electronic equipments generate several problems for the enterprises or municipalities: They occupy space in warehouses, offices, rooms or where stockpiled after consumption or once damaged, and constitute a risk to the people's health to contain potentially hazardous materials or metals which can contaminate soil or water bodies if released by ruptures.

He also told us that Silkers S.A. is the leader in Argentina in the Sustainable Management of Electrical and Electronic Equipments Waste. The company provides services of collection, separation, recovery and recycling of e-scrap (electronic waste), recovering important natural resources and minimizing environmental impact.



During the plant tour we saw many types of electronic scrap, parts of computers, phones, printers, fax machines, home appliances and others, which contain substances such as lead, zinc, nickel, beryllium, arsenic and cadmium that are potentially hazardous to health and the

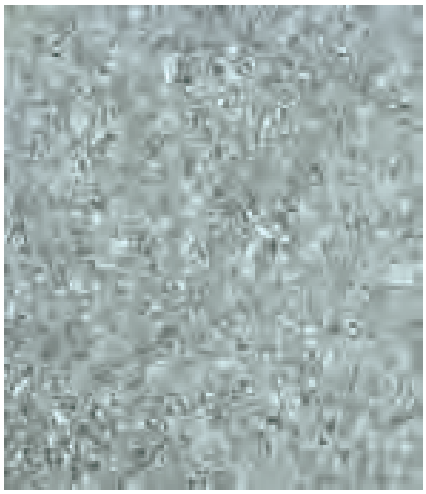
environment.
Some generators of such waste, such as EPSON and HP enterprises, pay to SILKERS for each ton of electronic waste for treatment and disposal of them, as these enterprises are managed by international standards that require such action.

The plant has a staff of 25 employees and handles between 120 and 130 tons of e-scrap per month.

Without make light of merits of its contribution in reducing the wastes and protecting the environment, it is worthwhile to mention that Silkers only collects, dismantles, sorts the wastes and then exports to countries like Sweden that have refineries and technologies to separate recyclables.

Thursday, November 12 2009, 04:00 p.m.
Visit to RECICLAR (Recycling of plastic material such as PET, PEAD y PEBD)

RECICLAR S.A. is an enterprise founded in 2005 aimed at the recycling of PET bottles primarily, in addition to recycling of polyethylene of high and low density in a smaller proportion.



As Mr. Nicolas Pell Richards explained to us, who met us at these facilities, the enterprise started in 2006 the industrial production of PET flakes from post consumer packaging and export of these products to Asia and afterwards they supply to various industries in Argentina, Asia, Europe, North and South American countries.

We had a tour inside the plant, where we observed the process from receipt of PET in bales, cleaning, and separation from other elements, crushing, and transport by belts to storage as a final product of the flakes of PET. The enterprise also has the ability to produce pellets PE and PP.

The plant has capacity to process up to 2,200 tons of plastics per day and no doubt this is a significant contribution to waste minimization.

However, we could note that its operation process consumes large amounts of electricity and water. It has no treatment plant for sewage. It generates high levels of noise and air pollution by particles scattered during the grinding process.

Friday, November 13 2009, 09:30 a.m.
Visit to CLIBA (Wastes Collection Private Enterprise)

In Cliba offices we were greeted by the following persons:

Eng. Julieta Achutte – Technical Office
Arch. Cecilia Mosello Digón – Head of Contract Management
Martin E Tuñas – Security and Technology
Emiliano Ahlen – Head of Operational Control Center

According to the explanations presented to us, the company is responsible for the collection of the Zone I in the capital of Buenos Aires, covering a total of 11 barrios (townships) in 3.910 highly complex blocks, where over 1,200 tons of solid wastes per day are produced and approximately half a million people transiting the area.

The company has ISO 9001 and ISO 14001 certificates.

The collection system used is mixture of 104 units of their own collection vehicles and 11 units contracted. They are responsible for waste collection from 1,580 wet waste containers and 937 dry waste containers.

They have an Operational Control Center (OCC) (CCO by its initials in Spanish), which allows the support to the service area and information node with actors of the service providing a quick and fluent communication to act immediately and allows monitoring of all routes and online tracking.

The OCC system is very similar to our monitoring and control system based on GPS technology, with the advantage that they have a good communication system that is integrated into the OCC, where messages are sent directly to system actors and use of communication radios, which facilitates the development of work in the field, we proposed them to provide some additional tools in the alerts and reports

that developed in our system, in order to enrich the system each other.

One of the successful points and being helpful to the implementation is that the separate collection system is established, which the Government of Buenos Aires, established in Resolution No.50 and No.808 concerning the selective disposal in hotels 4 and 5 stars, public buildings of city government and buildings over 19 floors.

This system recovers recyclable materials as paper, plastics, glass, metals and textiles among others, produced by these generators.

In the case of the National District, where we are implementing a collection system for large generators, we could take this example for the large generators that we serve through a municipal resolution to achieve that they make the separation at source and thereby to strengthen our target set in the minimization policies.

One of the highlights of this visit is the experience on the part of private enterprises in the relations with the community, which is a new experience for us.

They have Mass media campaigns: “Let us separate for Recycling in city barrios and Play clean”, which proposed to citizens to achieve among all, the cleanliness of the City.

Two significant differences can be highlighted between the collection systems in both cities, one is the aspect of the influence in the street waste-pickers system, which directly affect the collection system up to the point that they are obligated to make route modifications and to look for alternative methods in order not to affect the informal recycling activity.

The second aspect is the collection staff Union, which directly affects the service cost, as a result of the high wages they must pay for these, and there are many requirements within the system, it also affects the efficiency, since they do not exercise tasks that are additional to those established.

Friday, November 13 2009, 02:00 p.m.

Courtesy Call to Secretariat of Environment and Sustainable Development of the Nation

As for the visit to the main office of the Environment Secretariat of the Nation, we were greeted by Mr. Paul Mesa General Coordinator for the Integrated Management of Urban Solid Wastes, with whom we discussed the general policies and regulatory framework for solid waste management on the level of the Argentine nation.

During the meeting, we saw an example of the National Project for Integrated Management of Urban Solid Waste (NPIMUSW) (PNGIRSU by its initials in Spanish), which seeks to implement solutions for the solid wastes problems through sustainable approaches from a federal perspective.

The project provides technical and financial assistance in the form of an incentive for provinces and municipalities so that they can develop their own plans and integrated management systems, in the framework of National Strategy objectives.

This project provides funding for infrastructure costs for final disposal and associated systems, such as construction of landfills, treatment plants, transfer stations and open waste dumps closure, as required.

Other components are, the institutional strengthening of the authorities involved in wastes management at all levels of government, and the development of social plans in different jurisdictions for the social inclusion of informal waste recyclers.

We talked about examples of how some provinces are complemented each other regionally for the waste management, mainly on the issue of Final Disposal, since the framework of this project would serve for us to consider agreements of the Mancomunidad Del Gran Santo Domingo.

An improvement opportunity in which we are working is the analysis of costs of collection systems, which could not actually be determined by the ministry and they are of great importance in order to make decision mainly when dealing with municipalities with different social realities.