

CHAPTER One



EVALUATION PROCESS

1.1 INTRODUCTION

The Municipal Solid Waste Management Services Regional Evaluation (Solid Waste Evaluation) emerges from the need of having a frame of reference that makes the solid¹ waste sector visible in LAC countries, where the majority still constitutes a virtual sector, many times ignored or integrated to another sector without the individuality required to insure their development and accurate management.

The municipal solid waste management situation is critical in many countries of the Region, as is indicated by the alarming environmental deterioration and the sanitation problems related to the unsafe management and limited attention given to this area.

Even though there has been moderate progress as a result of national and international initiatives, among which *Agenda 21* stands out, the Region continues having an important deficit in the coverage and quality of solid waste management services, more noticeable on urban marginal zones, mainly in the most impoverished areas of big cities. With the exception of some well defined initiatives, the majority of the investments in the solid waste management area, at a sectoral level, have been related to other projects as a minor component, and activities in this area lack the necessary planning to guide the sector's future steps and strengthen the capability of municipalities to improve solid waste management.

The Solid Waste Evaluation was developed under the regional implementation of the general framework of Chapter 21 of *Agenda 21* and the follow-up of the goals established during the United Nations Conference on

the Environment and Development (CNUMAD-92 for its Spanish acronym), which took place in Rio de Janeiro in 1992. The *Agenda 21*, within the sustainable development framework, identified the need to consider the minimization of solid waste generation and recycling as key strategies to reduce the primary problem and channel rational waste recycling, as well as its collection, treatment and disposal in an environmentally safe manner.

Ten years later, the World Summit on Sustainable Development, which took place in Johannesburg in 2002, urged countries to renew their efforts in order to guarantee the sustainability of the environment, by incorporating sustainable development principles into national policies and plans, having as a central axis the goals of *Agenda 21*.

The Hemispheric Meeting on Health and the Environment (HEMA) which took place in Ottawa, Canada in March 2002, confirmed the importance that the countries continue with their efforts to achieve human sustainable development, recognizing the limitations that each country has to accomplish it. In this regard, the meeting emphasized the importance of strategic associations among health and environmental sectors, among these and other public role players and the community, as well as PAHO and other relevant international organizations collaboration with countries in topics related to health and the environment, within which solid waste management was identified as an action priority area in the Region.



1 The solid waste sector is perceived as a group of institutions, laws, regulations, standards, persons and goods related to lending these public services.

Currently, the main international and national force to carry out a series of consolidated goals from several world summits during the nineties on a series of priority issues that include health, environment and equity is the Millennium Development Objectives (ODM for its Spanish acronym)², expressed in the United Nations Millennium Declaration, adopted by 189 United Nations member countries during the Millennium Summit in September 2000. Later, during the Sustainable Development World Summit that took place in Johannesburg in 2002, strategies were determined to put into practice said objectives adding the access goal to basic sanitation, topic that was not previously included. The ODM's provide a common platform to guide the countries' efforts, as well as technical and financial cooperation organizations to accomplish well defined objectives, intrinsically related with one another, centered in poverty reduction and sustainable development with equity. Specifically, goal 11 of objective 7, which refers to guaranteeing the sustainability of the environment, calls to considerably improve, by the year 2020, the life of at least 100 million people living in dumps at a world level, who lack adequate housing and basic services, situation closely related to urban poverty. Consequently, the improvement of urban sanitation and the gradual evolution of informal economic activities (for example, waste segregation) to more formal and organized activities are an integral part of the MDOs.

Within that context, PAHO, acknowledging that solid waste management is one of the most urgent demands that cities and all the municipalities in the Region have, because of its strong impact on the health of individuals and the environment, took the initiative to carry out the first solid waste regional evaluation in LAC.

The objective of this report is to present a more detailed and updated regional image of the solid waste management situation in LAC, by using national information foreseen by each country, with the direct participation of the sector's national authorities and representatives from state and local institutions linked to it. It is expected that the conclusions of the

Solid Waste Evaluation contribute to guide national and local capacity building and apply the information to the decision making process and the adoption of policies by providing the basis to intensify the necessary investments at every level and accomplish the planning, integration and development of the sector, as well as improve the capacity of the municipalities in LAC countries. Also, it is expected that the evaluations carried out in each country serve as basis to establish dynamic information systems that allow us to measure the effectiveness of solid waste national and municipal plans and programs.

Even though it is well noted that an established solid waste sector does not exist in practically any country in the Region, this report uses this term throughout the document for practical reasons, in order to standardize the concept and related activities.

1.2 BACKGROUND

Since the seventies, PAHO has been supporting the countries in the Region in national and municipal capacity building to adequately manage solid waste. Technical cooperation from PAHO in this field is guided towards strengthening government strategies and policies to develop integrated solutions for solid waste management issues taking into consideration technical, legal, financial, institutional and social key aspects.

PAHO has carried out a series of initiatives to contribute to a greater understanding of deficient management problems, or lack of solid waste management and examine opportunities available in LAC countries to incorporate this sector into the national and local development process. An important part of cooperation in this field has been the carrying out of solid waste sectoral analysis, for which PAHO has specific methodological guidelines, jointly developed with the Inter-American Development Bank (IDB), the International Bank for Reconstruction and Development (IBRD) and the United States Agency for International Development, Environmental Health

² The eight Millennium Development Objectives, with a goal towards 2015, are looking to reduce half the number of those that experience extreme poverty and hunger; achieve primary and universal education; promote gender equality; reduce two thirds of infant mortality in children five years and under; reduce maternal mortality rate by three quarters; prevent HIV/AIDS, malaria and tuberculosis; guarantee environmental sustainability; and promote world unity for development.

Program (USAID/HEP). Since 1995 to date, PAHO has carried out 15 solid waste sectoral analysis in the Region³, which have identified activities and projects necessary for the re-planning and development of the sector in said countries. The sectoral analysis has constituted a valuable incentive for decision making on sectoral policies guided towards the strengthening of national reform and sectoral modernization processes, as well as on local policies guided towards improving municipal work, also including training to optimize administrative and operative structures.

In 1997, PAHO in a joint effort with the IDB, carried out a *Diagnosis of the Municipal solid waste management situation in Latin America and the Caribbean*⁴, which presents a first regional frame of the solid waste sector for LAC based on sectoral information of a respectable number of LAC countries. The Diagnosis integrates different institutional, legal, economic, financial, technical, health, environmental and social aspects that constitute the matrix in which the sector is developed, offering therefore, a first source of consolidated reference for the Region.

The growing recognition of the solid waste problem in the Region and at the same time the lack of knowledge of its magnitude due to the lack of data at a municipal level, revealed mainly by prior studies, motivated the implementation of the Solid Waste Regional Evaluation. This is the first evaluation that includes all the LAC countries and territories, inviting them to participate within the frame of common reference with the purpose of examining the solid waste management situation in each of them, as well as verifying opportunities and limitations that are present in this area, for the purpose of establishing individual priorities of the countries such as those that are regional or sub-regional in character.

This volume presents and analyzes the information provided by the countries in the Region in this area.

1.3 SOLID WASTE EVALUATION OBJETIVES

The main objective of the Solid Waste Evaluation in LAC is to provide information on the current situation and future perspectives of municipal solid waste management services in LAC countries, to facilitate the establishment of policies, plans and programs guided towards the improvement of these services and contribute to the reduction of adverse effects that inadequate management triggers on the health of people and the environment.

The Solid Waste Evaluation has the following specific objectives:

- Contribute with the countries in the information collection and analysis on the actual situation of municipal solid waste management to increase national and local capacity and efficiency to formulate and establish policies, plans and programs that aim at improving the management of these services.
- Develop a permanent data base with information provided by the countries on different operational, financial and commercial indicators to monitor and evaluate the performance of public sanitation services, including the generation of waste per capita, coverage of sweeping services, waste collection, transfer, treatment and final disposal, service quality, costs, investments, private participation, development opportunities, among others.
- Prepare Analytical Reports on the solid waste management situation within the integral context of the country and the perspectives of the management in each of them, in order to evaluate services, identify problems, establish priorities and make relevant recommendations to the country's objectives.
- Identify problems, deficiencies, progress and accomplishments, as well as best practices in solid waste

3 Guatemala (1995), Uruguay (1995), Mexico (1996), Cuba (1996), Colombia (1996), Nicaragua (1997), Chile (1997), Mexico, Metropolitan Area (1997), Peru (1998), El Salvador (1998), Venezuela (1999), Paraguay (2000), Panama (2001), Ecuador (2002) and Guyana (2003). The complete text of these sectoral analysis can be found in the CEPIS Health and the Environment Virtual Library at the following e-mail address: www.cepis.ops-oms.org

4 Pan American Health Organization and the Inter-American Development Bank. *Diagnosis of the Municipal solid waste management situation in Latin America and the Caribbean*, 2nd ed.. Washington, D.C. PAHO, August 1998 (Environmental Series 18). The first edition was published in July 1997, publication No. ENV97-107 by the Inter American Development Bank.

management in the countries, to allow for the sector's development and planning and the formulation of policies and plans guided towards solid waste minimization and improving the management and quality of the services.

- Consolidate information available in the countries in order to identify solid waste management trends and guide cooperation among countries and technical and financial cooperation of external cooperation organizations.
- Identify technical and financial cooperation priorities destined to decreasing environmental and health risks due to the inadequate management of solid waste.
- Prepare a Regional Report based on information provided by the countries that reflect municipal solid waste management trends at a country and regional level to determine PAHO's technical cooperation projections in LAC.
- Enable the database for direct universal access to it through the CEPIS WEB page that includes specific information by country and region, the analytical reports from countries and the Regional Report.
- Support countries within the reach of the ODM.

1.4 SOLID WASTE EVALUATION METHODOLOGY

The Solid Waste Evaluation began during the early 2002 with a series of preparation and scheduling activities. The collection of information for the Evaluation was carried out in the countries during 2002 and part of 2003 and concluded during 2004 with the analysis of the data, their integration to the CEPIS Environmental and Health Virtual Library and the preparation of this report.

The Solid Waste Evaluation was developed under the coordination and guidance of PAHO through a Regional Coordination created by the Sustainable Development and Environmental Health Area, Local and Urban Development Unit (SDE/LU) in Washington, D.C. and the Basic Sanitation Unit/CEPIS.

The Solid Waste Evaluation was carried out through the following stages:

a) Solid Waste Evaluation conceptualization and design

Based on the experience obtained with the sectoral analysis and other PAHO activities in the solid waste management area; key issues to be included in the Evaluation were identified. Twenty-three forms that covered general population, health, education and socioeconomic aspects, and sector specific aspects that included quality and service performance indicators, financial, health, environmental and social aspects were designed for this purpose. They also included sectoral information referring to general planning, institutional responsibilities and public and private participation levels.

The forms were discussed with international experts during a meeting that took place in the Brazilian Association of Sanitation Engineering and Environmental Sciences (ABES for its Spanish acronym), which took place in Rio de Janeiro. The agreements from the meeting were integrated to the content of the forms making the necessary adjustments for the Evaluation's regional coordination. The forms were validated using information from the solid waste sectoral analysis carried out in Venezuela, Guatemala and Cuba with the participation of CEPIS and the Bureau of Environmental Health (DIGESA for its Spanish acronym), of the Health Ministry in Peru, to insure their feasibility.

To supplement the information in the forms, the directives of the Country Analytical Reports were prepared, indicating the document's characteristics, its objectives and its specific content (see annex).

An information system was developed to enter data and the analytical report on the CEPIS web page, based on the design of the forms' content, where a special space was created for the Solid Waste Evaluation. For this purpose, an automatic system was designed in order to detect and verify potential inconsistencies in the data recording process. The regional coordination was in charge of the final verification and analysis of recorded information.

In order to provide an opportunity to interact with participating countries, a discussion list was also created in the CEPIS web page making reference to the Solid Waste Evaluation, to which the members from the national groups in charge of the Evaluation and regional coordination had access. This list allowed for broad consulting with countries during this early stage. At the same time, the Solid Waste Evaluation questionnaires were sent to PAHO Representatives to be reviewed by the Health and Environmental Advisors from each country and discussed with the sector's representative institutions, which are part of the National Coordinating Group of the Regional Evaluation of the Solid Waste Management Services.

b) Regional Consensus and Coordination

In order to standardize the concepts and adapt the procedures to the reality of the LAC Region, a sub-regional meeting was organized with experts and representatives from countries involved in the sector to validate the methodology used and reach a consensus on the strategy to be followed in order to carry out the Solid Waste Evaluation in the corresponding countries. The coordination meeting was carried out at the CEPIS, in May 2002 and assembled the Spanish speaking groups, including Belize, Guyana, Haiti and Suriname. At that time, two groups were formed, carrying out simultaneous meetings. A structure and the content of the Analytical Reports was agreed upon as a result of the meeting, as well as an activities and strategy program to carry out the Solid Waste Evaluation in the countries.

A special space was created in <http://www.cepis.ops-oms.org> to enter and accredit data for the Solid Waste Regional Evaluation to which the 23 forms discussed in the sub-regional meetings with their corresponding institutions, were incorporated.

The solid waste evaluation in the countries

In order to carry out the Solid Waste Evaluation, each country organized a National Coordinating Group con-

sisting of representatives from national institutions involved in solid waste management, representatives from national planning institutions, sectoral development, from statistics and census, from municipalities and NGOs from the sector, among others. The information on national groups was registered in the Evaluation's data for future reference and possible consultation.

PAHO assigned a Health and Environmental Advisor in each country in the Region, as the person accountable for technical support in the development of the Solid Waste Evaluation.

The Regional Evaluation of Municipal Solid Waste Management was carried out in four stages in each country:

- (i) The first one consisted on the confirmation of the national groups that provided technical and logistic support during the whole Evaluation process.
- (ii) The second stage consisted of data selection and collection according to information required in the forms. These data were recorded for each National Coordinators Group in a way that the information provided would be considered the official national information available. The Solid Waste Evaluation used information available in the country from different sources, including census data, national development plans, sectoral studies, prompt evaluations, project reports, reports on solid waste management information systems at a national level, surveys, interviews and other related documents. The information submitted corresponds to 2001.
- (iii) The information was entered, in the third stage, on the CEPIS web page referred to the Solid Waste Evaluation by the national groups with the support from PAHO's Health and Environment Advisor, and included the information's review and validation.
- (iv) The fourth stage consisted of preparing the Country's Analytical Report with the purpose of obtaining a more complete vision of the national scope with regards to solid waste management, according to the terms of reference agreed upon.

Each country was responsible for preparing the analytical report and it was submitted at a national level during a meeting in which the institutions involved in solid waste management were involved.

Regional consolidation

The coordination, promotion and follow-up of the Solid Waste Evaluation at a regional level were PAHO's responsibility, through a Regional Coordination group. With this objective, the leadership of the Regional Coordination Group was assigned to the SDE/LU, also including experts in this area and the CEPIS technical team. Through this support, the information provided by the countries was examined to verify its content and supporting data, besides detecting potential inconsistencies, with which a continuous follow-up process was maintained with the countries.

The Solid Waste Evaluation information recorded in the CEPIS database and the corresponding analytical reports prepared by the countries constituted the base to prepare the current report.

Population reference unit

Taking into account that in LAC, the solid waste management responsibility is not necessarily restricted to a specific location, but falls on the local governments that are present, the Solid Waste Evaluation used as a unit of basic reference the so called "population nucleus", meaning cities, locations, villas, among others, with administrative autonomy for solid waste management. In this manner, cities, districts and communities from municipalities that met the requirement were incorporated. In order to detect peculiarities in solid waste management related to the size of population centers, three population centers of different sizes were taken into consideration: (i) large, include a population of 201,000 to more than 1 million inhabitants, (ii) medium, that cover from 51,000 to 200,000 inhabitants and (iii) small, that include populations of up to 50,000 inhabitants. Different sub-groups were formed within these groups as indicated in Table 1, which includes the amount of population centers from LAC countries participating in the Solid Waste Evaluation, with their corresponding population. The Evaluation did not include isolated populations, defined as that which does not exceed 150 inhabitants and where the concentration of houses is less than 15 houses per road kilometer.

Table 1. Number of urban population centers and relevant population according to size and amount of population in the Latin American and Caribbean Region

| Population Centers | Population sub-centers (No. of inhabitants) | Number of population centers | Population (1,000 inhabitants) |
|--|---|------------------------------|--------------------------------|
| Large | More than 1,000,000 | 42 | 111,991 |
| | from 500,001 to 1,000,000 | 54 | 37,876 |
| | from 200,001 to 500,000 | 204 | 63,036 |
| Total Large | | 300 | 212,903 |
| Medium | from 100,001 to 200,000 | 305 | 42,725 |
| | from 50,001 to 100,000 | 526 | 36,745 |
| Total Medium | | 831 | 79,470 |
| Small | from 15,001 to 50,000 | 2,036 | 53,731 |
| | Less than 15,000 | 5,106 | 31,626 |
| Total Small | | 7,142 | 85,357 |
| Total Latin America and the Caribbean | | 8,273 | 377,730 |

Note: Does not include the Netherlands Antilles, Aruba, Bermuda, Guadalupe, French Guyana, Turks and Caicos Islands, US Virgin Islands, Martinique, Montserrat and Puerto Rico that not participated in the Solid Waste Evaluation.

As can be seen in Table 1, the majority of the population centers are found within the medium and small population centers that shelter approximately 44% of the LAC urban population. In fact, in this range of sizes is the largest number of cities and locations where the most critical management, operation, administration and financing problems are identified, in relation to urban sanitation services. Therefore, these centers require greater attention with regards to training and technical assistance guided towards establishing the basis for sustainable management.

Thirty six countries from LAC participated in the Solid Waste Evaluation: Anguila, Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, British Virgin Islands, Cayman Islands, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Kitts and Nevis, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay and Venezuela.

The information on the Municipal Solid Waste Management Services Regional Evaluation is available in detail at the Sustainable Development and Environmental Health Virtual Library (www.bvsde.ops-oms.org) by country, including the LAC Region as a

whole. In addition, the analytical reports from participating countries, as well as the complete text of this report are found at this site.

Solid waste evaluation information limitations

The data supplied by the countries represents the “best information available”, based on secondary information derived in some cases from estimates and in others, more reliable, obtained from official information and specific studies available. The inclusion of the source in the Solid Waste Evaluation database supports the information registered by the countries.

One of the great limitations, as indicated along the document, is the lack of municipal information on several solid waste management aspects, specifically in medium and small municipalities, which makes the data analysis difficult, since quite frequently the country’s averages have been obtained with a minimum amount of information. However, the little or nil information is an indicator of the capacity building needs local governments have in these aspects.