

# CHAPTER four



# SECTOR'S PERSPECTIVES



## 4.1 CHALLENGES

The inadequate management of solid waste has serious economic and social costs in terms of health, quality of life, environment, tourism, and production costs, among others that exceed the cost to control contamination and related sanitation problems.

The weaknesses that are sectoral in nature presented by the sector, have affected the quality, efficiency and sustainability in providing solid waste management services. These weaknesses have been related to:

- Restrictions in the functional autonomy of the agencies in charge of providing solid waste management services that have negatively influenced the administration and the financial and operational viability of these services.
- Difficulties to politically reconcile the recovery of costs for services through tariffs corresponding to their economic cost tied to an effective collection. Added to this is the internal generation of inadequate resources to respond to the financing of an investment program in the sector.
- Lack of planning and, therefore, implementation without a solid waste management integral approach that emphasizes waste minimization and its integral recovery, as well as its sustainable disposal.
- Lack of technical training at a managerial and operative level for the adequate management of solid wastes, which is the basis for problems of deficiently planned systems, as well as the few qualitative advances in recent years and mainly responsible for the misuse of resources.

Undoubtedly, one of the most critical aspects of solid waste management services in the majority of the countries, with few exceptions, is the financial economy. As an average in the Region, the rates and tariffs are not sufficient to cover between 40%-50% of the service costs, for reasons going from low municipal capacity to the lack of medium and long term financial planning at national, provincial and municipal levels. The lack of a payment culture that in certain communities can be attributed to the incapacity to pay due to poverty, added to the cost recovery problem. The low quality, and some times scarce coverage of urban sanitation services has a negative influence on the attitude of the population to value the service and feel some type of obligation in this respect.

One of the limitations identified in the Region, is the lack of institutional capacity, especially at a municipal level, to identify, develop and implement solid waste management plans and programs. Many municipalities have failed in organizing their programs due to the lack of sectoral support, the basis for the knowledge of urban sanitation services that has a repercussion on the effectiveness of potential measures adopted. There is a lack of specialized and trained personnel to meet these support tasks related to solid waste management. A considerable number of municipalities, especially the smaller ones, do not have specialized units in charge of solid waste management, nor the economic means to carry it out. The poorest municipalities with a low tax income have greater limitations, deficiencies or non-existing solid waste management, with the ensuing lack of equity in service coverage.

There is a considerable lack of investment projects in the solid waste management area by not having a governing institution in the majority of the countries. In some cases the availability of international funds for

environmental projects that include a solid waste component, exceed the country's capacity to identify and prepare susceptible projects to be financed by bilateral and multilateral organizations. In the Region, there are currently insufficient solid waste projects prepared and able to be financed being processed at national and international institutions. This lack of projects is due in part to the lack of sectoral coordination and the lack of investment planning and programming in this area with medium and long-term horizons. There should be a greater use of pre-investment tools, such as sectoral analysis, that offer the basis to develop investment plans based on the evaluation of a specific situation in the country.

Solid waste management needs to be urgently approached in countries as a part of the infrastructure planning. The solid waste disposal in landfills or any other adequate sanitation solution in the Region requires significant investments that probably many municipalities will not be capable of facing without the support of national governments and the private sector. Considering that medium size cities are the ones that will experience the greatest growth in the future and it is here where the greatest deficiencies and operational, managerial and financial weaknesses can be seen, where more attention should be given to the planning and organization of urban sanitation services in these urban centers.

Frequently, the specific scheme of the subsidy used in the solid waste area has not been appropriately envisioned through time in terms of efficiency, equity and stability. As a consequence, there are cases in which grants amount to more than 100% of the total cost of the service, such is the case of several Caribbean countries in which the central government assumes the total cost creating a strong dependency on the jurisdictions in charge of the service. Likewise, there are cases in Latin America where there has been an inappropriate use of subsidies that favor large generators and not groups at a greater financial disadvantage, resulting in great subsidy inefficiencies with grave consequences in municipal fund recovery and at the level of quality of the service. The challenge is to establish to what extent and how the fixed public and limited resources could be used in a more efficient way to promote the private investment and the social benefits of the sector.

In spite of the attributions that the municipalities have, given the legal autonomy that they enjoy, they are not

taken advantage of, either for lack of knowledge, or lack of political decision. The challenge that Latin American countries face at a local level continues to be to provide municipalities with legal instruments and financial and technical support for their administrative and financial modernization. At the same time, it is necessary to strengthen the personnel that work in the operational and financial area; modernize accounting and real estate records, as well as establish a rate system that allows cost recovery.

A challenge that is not sufficiently valued, is the greater weight that should be given to formal as well as informal education on solid waste, which should also address information activities and making the population sensitive, guided towards obtaining a change in behavior and attitude.

## 4.2 TENDENCIES AND PERSPECTIVES

Even though there have been significant advances in the majority of the countries in the Region in recent years, especially those on the establishment of new specific regulations for treatment and final disposal, there are still serious compliance problems.

The majority of the LAC countries are still far from reaching the goals proposed in Chapter 21 of Agenda 21 (CNUMAD-92), in the matter of solid waste management, specifically with regards to the treatment and disposal of urban solid waste. The goals proposed for the year 2000 to establish criteria and standards for the disposal and treatment according to the capacity of the receiving body, as well as establishing the capacity to monitor and supervise the impact of contamination related to waste treatment and final disposal facilities have only been partially complied with in very few countries. Likewise, the goal of reaching an adequate treatment and final disposal for 50% of the wastes by the year 2005 may seem that it will only be accomplished in a reduced number of countries, considering that the Solid Waste Evaluation showed an adequate 23% regional coverage of final disposal in landfills. All the more, the goal proposed by Agenda 21 of reaching adequate treatment and disposal coverage for 100% of the wastes for the year 2025 can only be met if the

countries concentrate their attention in the sector and they give it a renewed importance.

Considering that it is estimated that by the year 2030 around 84% of the LAC population will live in cities, and that the great majority of the poor will be urban, the needs for urban sanitation services will be urgent, with the ensuing health and environmental impact. The Millennium Development Objectives provide a renewed approach to accomplish a broad spectrum of goals that cover practically all the essential aspects of human well-being. The Millennium Development Objectives with regards to improving the quality of life of the population in slums puts emphasizes on the improvement of basic infrastructure and services – that include solid waste management – for this population for which it is necessary for the national, state, and local government authorities to show their efforts in that direction. According to the operational strategy of Study Group 8 of the Millennium Project<sup>23</sup>, the goal of improving the conditions of life of 100 million people living in slums at a world level by the year 2020 will be carried out in incremental stages, following the “Cities without Slums” action plan for which it is fundamental to have the cooperation and commitment of national and international organizations.

It is undeniable that the globalization in LAC will have a greater indirect effect in the production and type of solid wastes. The world macro economic trends promote a new economic model for the XXI century, where the bilateral and multilateral free trade agreements, such as the North American Free Trade Agreement (NAFTA), the Free Trade Agreement between Central America and the United States (TLCAUSA for its Spanish acronym) and the Free Trade Area of the Americas (ALCA for its Spanish acronym), cause the redistribution of the economic geography of the countries, based on the products negotiated and the quotas agreed upon, which implies the movement of the work force for farming, harvesting or production of new products. This brings with it the migration of new populations to work centers, which will exercise greater pressure in the infrastructure and service demand, specifically in the poorest outskirts areas of big cities. With new technologies, solid wastes

generated or imported will not necessarily be friendlier to the environment and can create severe threats to public health, especially hazardous waste. Therefore, it is important to involve regional commercial agencies, such as MERCOSUR, the Andean Community, the Central American Common Market, the CARICOM, TLCAN, ALCA, among others, in committing to environmental issues through a higher degree of international harmonization of environmental norms of products and processes.

The financial aspect of solid waste management does not only present the need for changes in national policies, but it will also be necessary for international and regional institutions that grant loans and technical assistance to review a few of the policies that establish conditions to provide support to solid waste management investment projects, providing greater opportunities guided towards local governments.

The technology for solid waste disposal is available and there are a variety of techniques depending on the local needs based on the size and physical location of each city or the association of several municipalities. The techniques vary from the use of simple manual landfills to very complex incineration and pyrolysis techniques. However, due to the lack of adequate sectoral studies, the needs in this area are many times not well defined and the projects do not have the expected impact on the local environment.

The Solid Waste Evaluation reveals that with the data available, there is no way of quantifying for the Region as a whole, investment needs for solid waste management because there is no concrete information that projects priorities in this field. It is important for countries to evaluate this aspect to guide investment opportunities based on complete knowledge provided by a sectoral type analysis.

On the other hand, there are currently new opportunities to strengthen the solid waste sector with the enactment of more specific laws for the sector and the creation of national environmental entities. Likewise, it is possible to identify new approaches to strengthen local management, as is the case of the alliances among sev-

23 The Millennium project is the independent advisory branch of the United Nations Secretary General, who has commissioned the formulation of recommendations for operational strategies by June 2005 to reach the Millennium Development Objectives. The maximum objective of the project is to help insure that all the developing countries reach the stated objectives.

eral municipalities (consortiums, associations) as a way of visualizing solutions with financial accessibility, institutional and economic sustainability and community participation. The trend towards decentralization and democratization has taken local governments to the integration of new ways for citizens participation in waste management that have proven effective in improving services and the quality of life of the population, strengthening communication between the local authority and the community.

### 4.3 PROJECTIONS

As the countries in the Region reach a greater level of development, marked by a greater economic growth, solid waste production will increase. It is going to be necessary to discover effective waste reduction or minimization alternatives with the participation of all, from industry with the manufacturing of biodegradable packaging materials and lighter containers, to active citizens' participation in reduction at the source, reuse and recycling of products. Likewise, it will be necessary to promote mechanisms that create favorable conditions to promote recycling, through technology, market and legislation, to extend this activity to sub regional levels, which will allow the expansion of opportunities in this area.

It is estimated that investment needs in infrastructure and equipment to improve urban sanitation systems, especially to expand collection, implement adequate solid waste treatment and final disposal solutions, are going to be substantial, especially considering the terrible conditions in which it is. In addition, the alternative technologies with social participation and environmental education will be key for adequate solid waste management in the Region. Within this context, the creation of micro companies or productive associations should be promoted with the business administration approach, in order to improve sanitation and create compensated and permanent employment generation sources.

Everything implies that the participation of the private sector and the community organized in solid waste management, as participants in different management stages, will increase, lightening the municipal load and offering greater possibilities to solve the problem.

However, it is necessary to have the conditions conducive to their participation, in the legal, as well as in the economic aspect.

### 4.4 FUTURE ORIENTATIONS

On the basis of reviewing the Latin American and the Caribbean experience, three basic pre-requisites that should be satisfied to increase the sector's efficiency can be identified:

- (i) There should be a firm and persistent commitment from the governments in the sense of formulating specific policies and identify and make investments in the solid waste sector.
- (ii) There should be a basic expansion of the institutional, as much as, technical, governing, and administrative capacity for solid waste management.
- (iii) There should be adequate financial resources and in the correct conditions in order to accomplish self sustainability from the service and to be able to carry out the selected investments.

#### The reordering of the sector

At a national level, it is necessary that the solid waste area be acknowledged and treated by the governments as an economically viable sector or sub sector, with specific objectives, programming, resources and restrictions. This would help the countries in terms of establishing stimulating policies and guaranteeing financing levels for the private activity in the sector. The way in which solid waste management is promoted in the future will depend on the degree in which this basic deficiency is acknowledged and corrected.

With this purpose, a clear definition and separation of the functions that the different organizations involved in the sector require for its adequate institutional organization and to prevent overlapping, evasion or gap in capabilities. The sectoral ordinance should take into consideration:

- *The governing of the sector*, which should be clearly established determining the entity, either in the form

of a ministry, a commission or any other international figure, that is accountable for the national direction and coordination of the sector and that is in charge of formulating, implementing and following-up the public policies, planning and programming related to the sector, as well as the regulation and control of environmental factors that carry risks to health and the environment.

- *The regulation of the services*, which should take into consideration the performance of service providers through the promotion of dynamic institutional models that comprise the participation of local governments, service users and the private sector; the quality of the service through established norms and standards established by qualified mechanisms and the price at which the service is provided through tariff plans that guarantee the financial viability of the municipalities and/or sanitation companies and establish in a transparent and explicit manner the subsidies' system, and the obligations, rights, capabilities of companies providing the service, the users and the state. Besides, it is important to promote the approval of specific municipal regulations for solid waste management with emphasis in their separation and minimization. The regulation of the sector constitutes a topic that should be carefully examined in the countries to determine the most appropriate intervention policies in relation to the service provider and the user. The establishment of norms, standards and regulations should respond to local conditions and many times taking as a basis, and not as a criteria, international norms, standards and experiences that many times are not applicable to the national context of the countries in the Region.
- *The operation of the services*. Attention should be given to municipal capacity building taking into consideration that the administration of solid waste management should be a municipal responsibility. The local entities responsible for the service should identify, evaluate and put into practice new ways in which to provide the services, in a way that the private sector has participation spaces, either through private companies, mixed companies, cooperatives, NGOs among others, in the whole process or in part under different management plans. This participation should be carried out under regulation standards that originate from the corresponding authori-

ty in order to guarantee the quality of the services, and if possible, with the participation of a local users' committee.

- *Institutional organization*. A necessary pre-condition for the success of any change in favor in the solid waste sector is the strong political commitment of public institutions linked to the solid waste area to improve the situation. The institutional reorganization calls for greater coordination among existing institutions at a national, provincial and local level to establish national policies for solid waste management, and based on them, a national or strategic plan be developed along with the corresponding local plans.
- *The financial self-sustainability of the services*. This is a critical point that concerns the majority of the countries of the Region, whose problems to finance services originate from the lack of cost recovery. Frequently, the financial resources current towards investments in the solid waste area depends almost exclusively on the public funds availability for this activity and appropriate financial mechanisms are not applied. Measures should be taken into consideration in this respect, to establish new and innovating forms to adapt national financial mechanisms to the circumstances that characterize the sector, through the use of policies, incentives and other financial instruments, as well as the development of rate structures that are just and equitable.
- *The participation of the private sector*. The re-ordering of the sector includes the main participation of the private sector in order to take advantage of the greater administration capacity of the sector, given its great innovation capacity, access to resources, knowledge of technologies and managerial efficiency. The type of participation that the private sector can have in solid waste management should be analyzed according to the capacity of the local governments and the quality of the services that the sector offers. Therefore, the corresponding legislation in the countries should be reviewed in order to determine the necessary provisions for the participation of the private sector in these services and consider the possibility of creating capabilities through the periodic bidding of contracts and concessions. The private sector's participation in no way eliminates the responsibilities of the public sector, but commits



it as a governing and regulating entity based on the interests of its population. The perspectives of a greater participation from the private sector, well planned and guided, open new possibilities to make the sanitation service activities more dynamic.

- *Community participation.* It is important to design and implement programs in which the different social sectors participate in order for its implementation to go beyond the duration of public administrations and that it can be used as a bridge to provide continuity to actions and meet objectives at a medium and long term. The degree of public participation is essential in solid waste management. This participation is more effective when the community has some type of well-structured organization. In order to have participation, this community should be organized as a group, with established objectives, have the right and responsibility to make decisions that can be effective and, mainly, be able to decide on issues that affect the lives of its members (PAHO, 2002b). The community's participation in directly

providing urban sanitation services, through community public companies, cooperatives, users' committees and others, is an excellent route to link the community with public entities responsible for solid waste management.

### **Selection of adequate intervention tools**

According to specific conditions of LAC countries, it is desirable to develop innovative intervention models and instruments for solid waste management in order to be able to influence the behaviors of different role players – legislators, policy formulators, regulators, operators, users, local authorities, among others – that integrate the system. These instruments cover from legislation and regulation (known as command and control norms), taxation and permits (financial instruments), up to consumer protection and civil suits.

- *Command and control norms.* It is a fact that the regulatory policies and traditional legal instruments

are not as efficient to change groups or persons behaviors, more so when they are not strictly enforced, as it frequently happens in LAC. However, they provide the necessary stroma to establish the sector's formal legal base.

- *Intervention policies.* The use of economic instruments, even though controversial, can be effective to address the issue of inadequate solid waste management in case of having strong institutions, an adequate legislation and efficient supervision and control measures. The approach in the formulation of policies should be in prevention and not in mitigation. The promotion of activities at a community and household level should be an incentive for environmental ruling and communicate a sense of environmental responsibility with relation to waste management. This concept should reach the business sector with a proposal of financial incentives and disincentives and the corresponding legislation. The financial waste management aspect should include the identification of "green products" through ecological labeling in order to influence industry through purchasing power decisions, to consider reduction strategies in the selection of products and packaging, as well as the adoption of cleaner technologies. The legal aspect should include a regulatory frame that regulates production, exports and import of containers and packaging, and commits the producer or industry that are responsible for waste generation that is difficult to treat or biodegrade.
- *Market incentives.* The policies that use financial incentives should have an important role in solid waste management. Appropriate tax and subsidy policies are appropriate mechanisms to create incentives for waste minimization and recycling technologies, changing the nature of the products, altering solid waste components and reducing their social cost. Economic policies can be designed to promote the use of recycled material, depending on the technology and market conditions. Within this context, purchasing policies can be guided towards products manufactured with recycled materials. However, it should be taken into consideration that it is important to carry out careful studies to determine all the costs related to disposal and recycling methods, before a solid waste management policy is decided

upon. It is important that the recovery of recyclables and selective collection are always sustainable from the economic perspective. Even though regulations are essential from several aspects of solid waste management, the use of market incentives and financial principles can be highly efficient to modify the behavior of the population and increase the generation of income.

### **Assessment of the sector**

One way of giving visibility to the sector is through the appraisal of its economic value in terms of work generation, exchange of goods and services, available infrastructure, health and environmental risk reduction, the development of the small company and recycling. In this aspect, the authorities involved in the sector should participate strategically in carrying out, directly or indirectly, investigations on the assessment of waste in order to facilitate its recovery and establish business centers that favor micro companies as much as possible.

### **Strengthening administration and the performance of local governments**

Solid waste management is a local activity in which the national and provincial governments should support municipalities more and more, especially those that have a scarce managerial capacity and limited resources, in which the lack of information regarding the issue is more significant. The support from the central government is necessary to facilitate the exercise of the performance of local authorities, through policies, laws and regulations at a central level that support ordinances, coercive measures, operations and plans at a municipal level.

Considering that the solid waste management generic vision involves important performance differences between municipalities, it is necessary to establish capacity building criteria and procedures and performance evaluation of local governments, looking for:

- Equip municipalities with legal, financial and technical instruments for their administrative and financial modernization.

- Create indicators' systems that allow the evaluation of changes and the success of policies through time.
- Establish objective basis for comparison and reference among local governments, as well as among these and state governments (in federal countries) that allow a better scrutiny and accountability to the community.
- Offer incentives that lead to better governmental performance in environmental matters.
- Design financing packages and mechanisms suitable to the needs of each municipality on the part of the development bank.
- Promote the culture of payment for environmental public services among the community.
- Create a short, medium and long term planning culture for solid waste integral management, combining the release of existing resource and the application of the plans and programs referred to.
- Provide technical assistance and training guided towards personnel support, information and education at different levels of the municipalities on solid waste management.
- Provide training on specialized topics such as environmental protection, legislation, adequate elaboration of diagnosis and environmental impact studies, formulation of strategic plans and solid waste management services.
- Strengthen the capacity of local governments in solid waste management through guides, manuals, specialized software (i.e., COSEPRE, OPTIRUTAS, RESPEL, etc.) among others.

### Improvement of municipal management

The trend in the Region is to grant a greater leadership to the municipal authorities, reflected in the decentralization process, delegation of authorities and strengthening of democracy. Due to its leadership, the mayors and other local authorities participate each time in the definition of policies and in the execution of programs that benefit communities under its jurisdiction. One of

the most effective ways to improve municipal administration in solid waste management is through the Healthy Municipalities and Communities Strategy (MCS for its Spanish acronym), as part of a democratization and decentralization process that supports local initiatives, under the local management framework and community participation. This way a platform is provided in which all the interested parties can participate and collaborate to define key priorities and interventions (PAHO, 2002b). In this respect, local planning is a basic instrument and includes social participation in the implementation, evaluation and decision making (PAHO, 1999, PAHO, 1995).

The Healthy Municipalities Strategy requires the following elements:

- The **public commitment** established by the mayor or the municipal board, the local government (all the sectors), the NGOs, the private sector and the community to improve the quality of life through the MCS strategy that takes solid waste management into consideration.
- The strengthening of **community participation** during the initiative's planning, implementation and evaluation.
- The development of a **strategic plan** to capture internal and external resources, provide the adequate base and technical cooperation and create healthy spaces, through a participative and intersectoral process.
- The establishment of a **consensus** and the formation of **alliances** and social agreements, through several networks and projects, including different institutions involved in solid waste management, that include besides the government and local representatives, NGOs and the private sector.
- The **leadership and participation of the health and environmental sectors** and other sectors that interfere in solid waste management.
- The formulating of **healthy policies** in the local, regional and national environment.
- The continuous **surveillance and evaluation** to follow-up on the progress made by the initiative and identify expected results.

An integral part of the healthy municipalities strategy is the participative local planning that allows the community to express their intervention problems and priorities, agree with the municipality on the co-responsibility of solving problems and find and identify the opportunity of using resources. Therefore, it is necessary to legitimize the representatives of community organizations in order for them to participate in the local planning process, include the ideas and needs of municipal solid waste management services user community, decide on the use of local resources, supervise and support the lending of services, supervise compliance with systematic plans and commit the community and the municipal government to local development. The participative planning requires besides the intersectorality to carry out joint and well coordinated work with the different service sectors that act in the

locality and that interfere in waste management (i.e., health, environment, education, private sector, etc.). Likewise, it should include mechanisms to give transparency to the process and allow the community to supervise the use of public resources and compliance with local participative plans, programs and projects.

There are some success stories in the Region on waste management participative planning, such is the case of Brazil, Bolivia and Peru, among others that have a great potential to be duplicated and communicated. The healthy municipal network in LAC supports different nature initiatives in order to improve the physical and social environment, promote the mobilization of community resources for local development projects and promote community and intersectoral participation in all the development activities.



In the same path, the Primary Environmental Care (APA for its Spanish acronym) is presented as a concrete, broad and consistent answer capable of expressing different sectors and ideas guided towards improving the quality of life of the communities, in order to contribute to the construction of healthy municipalities, build the environmental primary level, strengthen management capability of local governments and establish a level of local environmental management that includes all the role players, specifically the communal and community government. The APA initiative can be widely used in preventing dengue and other diseases related to inadequate solid waste management, as well as in other activities where the participation of the International Ecoclubs Network and the Municipalities Network by APA has a leadership role.

In order to accomplish an effective municipal solid waste management it is important to encourage the participation of all the role players: central government, local governments, companies, organized community groups and the educational sector, in order to accomplish consensus and cooperation, and therefore facilitate common strategies for the benefit of the community as a whole.

### **International cooperation**

The technical and financial assistance international organizations can perform an important catalytical role to develop the solid waste area of the countries in the Region. External cooperation can be of great assistance with regards to creating national capacity for the identification and execution of projects, as well as for strengthening national and local entities involved in the solid waste area and in providing financing for pre-investment and investment activities. Likewise, international institutions could help establish research regional or sub-regional networks, as well as local and regional training centers that address the solid waste issue.

Technical cooperation should be guided towards a more complete approach in order to have a better perspective of the solid waste sector, its potential and limitations. In this aspect importance should be given to:

- The improvement of collection systems, processing and organization of sectoral information that allows

an efficient strategic planning at a national as well as local level that includes preparing a record of users that allows municipalities to know the universe where the service is provided and where there is a need to increase coverage.

- National capacity building with regards to obtaining a greater knowledge in waste management aspects. This capability is notoriously weak in the Region.
- The rationalization of policies at a sectoral level that allows the identification of investment opportunities under stable conditions with local and national objectives.
- The consideration of opening a line for financing small and medium size municipalities, as well as for the local private initiative, that does not have the investment capacity to install a solid waste management system at a municipal level.
- The strengthening of neither technical, managerial nor analytical capacity for local governments, especially of the smaller municipalities that do not have the organization nor the necessary capacities to carry out solid waste management. A greater number of professionals and technicians that are trained in assessing the sector's activities are required and who can integrate into it project research, training and development activities in order to establish priorities. Likewise, the training of service personnel should include sanitation and environmental aspects in their relation to the well-being of the community.
- The promotion and communication of investigations and technologies, especially the non-conventional, related to the collection and final disposal of wastes in the outskirts of cities and treatment of leachates in landfills. In this aspect, small-scale projects should receive support with high possibilities of marked duplication and demonstrative effects. Likewise, one should take advantage of and promote the experiences of the universities that are encouraging carrying out degree and research thesis on topics related to solid waste.
- The support to strategies such as "Healthy Cities" and "Healthy Municipalities and Communities", as well as Primary Environmental Care, that includes

solid waste management integral projects and activities adapted to the local reality. The mentioned initiatives are based on a broad participative management that includes the community, local government, non-governmental organizations and the private sector in order to establish healthy policies, create healthy environments, promote healthy life styles, develop personnel capabilities through education and empowerment especially in school and Ecoclub environments. These initiatives offer a great potential to establish activities that last through time, allowing the beneficial use of shared experiences through community networks and alliances with different institutions that share a common interest.

- Promote the use of indicators that help clarify the link between environmental and disease exposure in relation to wastes, that complement the most traditional risk evaluation tools such as exposure evaluation, toxicological and human studies, especially in populations adjacent to final disposal sites.
- Promote new alternatives to support the countries, states and municipalities in their economic possibilities for the self-sustainability of the urban sanitation system, such as promote the participation of countries in “carbon credits” or Certified Emission Reductions to help in reducing the emission of greenhouse gases to the atmosphere. This initiative, derived from the 1997 Kyoto Protocol from the United Nations Climatic Change Framework (CMCC for its Spanish acronym), can potentially have a monetary value for countries by going into an “emissions market” with countries interested in emissions reduction certificates, for example through the World Bank Carbon Prototype Fund, Climate Trust and Seattle City Light (Portland, Oregon, USA) and Holland Ministry of Economic Affairs (ERUP). The carbon credits represent a new source of capital for methane energy recovery projects produced by the anaerobic decomposition of organic waste disposed of in landfills. The World Bank is carrying out an initiative to obtain energy from Landfill gas (GRS) in the LAC Region related to the marketing of carbon credits.

### **Technical cooperation between countries (CTP for its Spanish acronym)**

The CTP is the implementation and management of development activities and projects by the countries' institutions in which they share experiences and mutual technical capacities and use, when necessary, the advice and financial support of external sources. In this respect, CTP should be considered an integral part of international technical cooperation<sup>24</sup> national, regional and inter-regional programs.

The CTP is a strategy promoted by PAHO in the Region of the Americas and it is developed according to cooperation in working order modalities and forms, which are not mutually exclusive, and therefore, are combinable among them. The CTP is carried out through:

- Reciprocity. It implies cooperation between two or more States, which assume commitments by combining efforts in a complementary manner, according to their areas of greater progress and technical excellence for mutual benefit.
- Exchange or cooperative system of joint use. Under this modality, two or more States decide, in a project, program or common company, to cooperate on the base of common objectives or goals facilitating information and technology.
- Contribution. Involves the transfer of technological resources of a country to other/others, leaving installed capacity that contributes to collective self-sufficiency.

The CTP strategy should intensify in LAC in order to promote the capacity of the countries in an individual and collective form with the guidance and support of technical and financial multilateral and bilateral cooperation organizations. It is necessary to promote more integrated and participative projects that include inter-sectoral institutions, the community, NGOs, professional associations and the private sector. There are practically no technical cooperation experiences in the Region among countries in the environmental health

<sup>24</sup> PAHO, CSP25/9, Rev. 1, July, 1998.

area that include strategic planning, resource mobilization, capacity building and human resource development components in the solid waste management area. The CTP in this area has been rather in the technical-operative side, such is the case of manual landfill projects carried out in Nicaragua and El Salvador and the programming and design of a CTP between Cuba and Haiti, carried out in 2002 with PAHO's support, whose implementation is still pending.

### **Strengthening of information systems**

It is fundamental to strengthen the information systems to support development options for the solid waste sector. The development of a national centralized information system that allows better organization should be mainly supported, in order to rapidly and easily satisfy the demands to guide the future of solid waste management in LAC countries, emphasizing the best use of existing information. The Solid Waste Evaluation offers a broad database and sectoral information that should continue being fed according to the interests of the countries. Likewise, PAHO, jointly with AIDIS is taking the first steps to design and establish national environmental information systems in relation to solid wastes, through the Inter-American Environmental Sanitation Information System (SISAM for its Spanish acronym). The SISAM will allow a dynamic exchange of sectoral information that will include public and private sectors. It is imperative to strengthen local information systems and incorporate data in local participative planning to make local solid waste management viable.

### **Sanitation education on solid waste management**

The community should be informed on the process that involves solid waste management in order to actively act on developing solid waste management, especially in waste minimization and, when the conditions are offered, in their segregation at the origin. The presence of NGOs such as Ecoclubs and other organizations related to environmental protection is the key to accomplish better health education and community participation. Likewise, waste minimization should be

promoted at home and in education and work environments. The Health Promotion Schools are the ideal vehicle to integrate and update the content and methodology of environmental health education in the school curriculum, as well as to reinforce Ecoclubs and the leadership of youth in protecting the environment (PAHO, 2003).

Furthermore, it is important to promote public sensitization campaigns regarding the responsibility that they have in urban and rural sanitation, in which the community, public and private institutions, business sector and others participate. In this aspect, the Sanitation and Community Inter-American Day (DIADESOL for its Spanish acronym) should be widely promoted in LAC, which is an initiative promoted by AIDIS, PAHO, ECLAC, the Caribbean Water and Wastewater Association (CWWA), the International Solid Waste Association (ISWA), the Organization of American States (OAS) and the Regional Office for Latin America and the Caribbean of the United Nations Environmental Program (PNUMA/ORPALC).

Greater emphasis should be given to educational programs in all the municipalities, communities and schools. This education should be permanent, integral, continuous and guided towards social agents considering: (i) health aspects and their relation to environmental problems (solid wastes and hygiene); (ii) participation aspects, in order for the community to assume their corresponding role in an autonomous and responsible manner the development of sanitation services; (iii) technological aspects with the purpose of transferring knowledge to the users so that they can have the capability of designing, installing, building, and operating technology in an autonomous manner and, finally, (iv) management aspects in order for the community to be capable of administering technologies through the development of productive, sustainable and self-managing projects.

It is of vital importance that education should always be accompanied by processes that facilitate and support changes in behavior, for which it is important to provide the community the necessary elements to maintain urban sanitation, such as containers for garbage in different points in the city or in public and private establishments, specific containers for the selective segregation of recyclable articles, schedules

and frequency of appropriate collection, the implementation of returnable containers systems, among others.

Increasing the access to information and technology using traditional and innovative means strengthens local capacity. Multimedia new technologies can improve the quality of education, including remote education. PAHO, in coordination with ECLAC, has developed a remote education course on household solid waste management and environmental impact, that has been implemented in several Latin American universities and will soon be implemented in the Caribbean. In order to maximize the educational value of these technologies, it would be important to adjust the curriculum in order to adapt it to the realities of the countries and municipalities.

There are institutions and education centers in the Region with great capacity to train and educate human resources, carry out research projects and collaborate in communicating knowledge and the transfer of solid waste management technologies.

### **Reduction of inequality in access to services**

There is a strong relationship between poverty and the lack of appropriate solid waste management services for the most poverty-stricken segments of the population. In a similar manner, there is a great disparity in social and institutional conditions between municipalities and localities of different levels of income in Latin American countries that have a repercussion in the amount and quality of services provided to the community. This disparity can be seen in medium and large cities in the different socioeconomic level neighborhoods.

Greater effort is needed to reduce the greater inequality that exists in access to education and basic services for the poor. Considerations to reach a greater equality in solid waste management services should take into consideration the visualization of greater opportunities for the participation of populations economically disadvantaged, through the construction of corporate funds and capacity building of the organization capacity of the poor. In the solid waste area, the access of the poor to market opportunities should be improved,

encouraging the solid waste management services micro companies.

International organizations can help countries and municipalities design solid policies for solid waste integrated management, and through their technical and training support programs, of loans and political dialogue can influence national and local policies, as well as the assignment of resources in such a way that they include provisions for poor communities, especially the urban marginal.

### **Social integration of disadvantaged minority groups that segregate waste**

In the accomplishment of greater equity and the ODM's it is indispensable to favor the development of projects with minority groups of women and children that segregate waste at final disposal sites, offering healthy viable alternatives for their incorporation into the community and into the recycling circuit, as a means to alleviate poverty in socially marginated populations. Within this context, consideration should be given to the communication and promotion of the "Children Out of the Garbage" initiative with the purpose of contributing to the improvement of the life style of waste segregating children and mothers, providing opportunities and alternatives for their physical, psychological, social and economic potential.

### **Insure compliance with environmental health and quality in all the phases of the service**

It is necessary to establish mechanisms to facilitate compliance with environmental quality minimum standards in all the waste management phases, in the LAC Region. The responsibility for environmental and public health consequences for municipal solid waste management should fall on the service provider. Likewise, the user should assume the corresponding responsibility with regards to waste generation and the behavior for management within their action field. Added to this is the producer's responsibility with regard to a cleaner production initiative. The sanitation service within the environmental per-

spective in the solid waste integral management context should be taken into consideration, where the shared responsibility principle should be the central axis, manifested by a social co-responsibility and joint participation, coordinated and differentiated from producers, consumers, solid waste management service companies, service users and the national, provincial and local governments.

Several LAC countries, with the support of a strong national environmental policy and the Environmental Primary Care and Healthy Municipalities' strategies, are adopting the solid waste integral management concept. This management involves a series of coordinated activities that cover from waste generation up to the final disposal, including reduction at the source, segregation, reuse, recycling, co-processing, biological, chemical, physical or thermal treatment, collection, storage, transportation and final disposal of wastes in order to accomplish efficiency in the sanitation, environmental, technological, economic and social areas.

Within this context, the countries should promote the dialogue and plead with the municipalities to implement feasible alternatives to minimize waste – in quantity and toxicity – in order to drastically decrease the amount of solid wastes that reach the landfills and other sites. The communication, education and motivation of the community are fundamental to accomplish this objective. The investments for the sector in large cities and a few medium ones that have sufficient managerial and financial capabilities should include operational plans for the separate collection of recyclable and reusable wastes in the future (for example, the purchase of modern vehicles with lateral load designed for this purpose). Likewise, emphasis should be given to the creation of collection centers for the recovery of recyclable materials. Considering that final disposal is the most critical part

of the waste management services, the smallest municipalities that do not have adequate human and financial resources should incorporate more simple technologies for the final disposal of wastes, for example, the Landfill manual to minimize environmental and human health impacts.

## 4.5 FINAL OBSERVATIONS

One of the greatest Solid Waste Evaluation values has been the promotion of the introspection of the countries in the Region to examine the situation in which the corresponding sector is found and project the needs of studies that have been concluded that allows them to direct their efforts towards a number of activities that show clear economic and social benefits that allow for the sustainability of solid waste management services and the well being of the population.

The Solid Waste Evaluation allowed the assessment of the difficulty that countries encountered when trying to obtain information relative to the sector, in part due to the current institutional separation and to the lack of local information necessary for decision making and the improvement of municipal management, especially in small municipalities. This is proof of a series of deficiencies with regards to internal information and statistical mechanisms national as well as local in the solid waste issue, that are an obstacle for potential solid waste integrated management. The countries with Solid Waste Evaluation can now have a baseline for future evaluations that will allow them to know the historical course of municipal solid waste management, and therefore, be able to evaluate results, not only in relation to the physical goals submitted, but also in compliance with the objectives of plans and programs proposed, with maximum benefits for health.