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Coalition for the closure of dumpsites
Latin America and the Caribbean

2023

Municipal Consultation on sustainable waste management and identification of training needs in Latin America and the Caribbean

Results Report



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Acknowledgements

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Executive Summary

This document has been jointly prepared by the United Nations Environment Programme (UNEP) and the Ibero-American Union of Municipalities (UIM, for its Spanish name) within the framework of the Voluntary Coalition for the Progressive Closure of Dumpsites in Latin America and the Caribbean (LAC).

Its objective is to identify the main needs associated with strengthening municipal capacities in order to address the challenges of solid waste management and disposal at this level, as well as evaluate the trends that may emerge in the area.

Solid waste management has become one of the main environmental challenges that municipalities in the LAC region must face. It is still evident that the majority of the waste generated is destined for final disposal, with a limited amount of schemes in which the recovery of waste as resources predominates.

There are several factors associated with this issue, with financing as a key issue for ensuring the sustainability of more innovative schemes. Other factors include limited control over direct and indirect operational costs, as well as insufficient investments and challenges in promoting efficient payment schemes for waste management services. It is necessary to highlight that the realities facing municipalities in the region regarding waste management control can differ widely according to their size and geographical location, which is reflected in their planning. Therefore, the design of programs, plans and policies should take these variables into consideration for proper implementation and achievement of promoted objectives.

The challenges, therefore, remain interlinked, and this analysis of the municipal Consultation highlights the importance of addressing formative aspects of various priorities that have an integral impact on the future training of technicians and professionals in finding solutions to address waste pollution.

1.CONTEXT

The Voluntary Coalition of Governments and Relevant Organizations for the Progressive Closure of Dumpsites in Latin America and the Caribbean was established as a follow-up to Decision 1 on Chemicals, Marine Litter and Waste Management, adopted within the framework of the XXI Meeting of Ministers of the Environment of Latin America and the Caribbean (Buenos Aires, Argentina, October 9-12, 2018). [1]

Decision 1 on Pollution [2] was adopted as a result of the XXII Meeting of the Forum of Ministers of Environment (February 1-2, 2021). It urges countries in the region to minimize waste production and progressively eliminate inadequate final disposal practices, guided by the Roadmap for the Progressive Closure of Dumpsites [3] in Latin America and the Caribbean.

The objectives of the Coalition for the period 2021-2022, as defined in their 2021-2022 Work Plan, were the following:

- 1.Support the implementation of the Roadmap for the Progressive Closure of Dumpsites and effective transition towards integrated waste management in Latin America and the Caribbean;
- 2.Promote the development, adaptation and dissemination of guiding documents that include technical, social, environmental and economic aspects in coordination with other initiatives, while considering existing work;
- 3.Facilitate capacity building and exchange of information, experiences and good practices on policies, instruments, related projects and funding opportunities;
- 4.Contribute to raising awareness about the importance of sound waste management throughout its life cycle and the consequences of inadequate waste management.

Furthermore, Action 1 of Objective 3 of the Coalition's 2021-2022 Work Plan (3.1) is the development of a training and institutional strengthening plan and the identification of experiences and good practices, which includes, as part of its activities, the identification of training needs through a Municipal Consultation and the analysis and documentation of the information from that Consultation to inform a subsequent Training Plan.

In this context, the United Nations Environment Programme, together with the Ibero-American Union of Municipalities, developed the Municipal Consultation to assess the needs associated with capacity building on waste management and final disposal at the municipal level in Latin America and the Caribbean and to identify municipal trends in this area (hence referred to as "the Consultation").

[1] Decision 1 on Chemicals, Marine Litter, and Waste Management. October 2018 [[Access link](#)]

[2] Decision 1 on Pollution. February 2021 [[Access link](#)]

[3] Roadmap for the Progressive Closure of Dumpsites in Latin America and the Caribbean [[Access link](#)]

Objectives and Scope

The general objective of this document is to present the main results of the Municipal Consultation developed in the LAC region, with the goal of assessing the needs associated with strengthening capacities in municipal waste management and final disposal and identifying trends from this perspective, in compliance with Action 1 of Objective 3 of the Coalition's 2021-2022 Work Plan.

Among the specific objectives of this document are:

- a) Present the municipal trends in the LAC region related to solid waste management, specifically in generation, collection, use of waste as resources, final disposal and the main challenges for dumpsite closures.
- b) Describe the normative trend in the LAC region, which includes municipal activity associated with solid waste management.
- c) Identify topics of interest for the development of knowledge and the strengthening of capacities at the municipal level.
- d) Present recommendations for capacity development within the framework of the Coalition for the progressive closure of dumpsites in the region.

Methodology and Process of the Development of the Municipal Consultation

This document was developed based on a primary source of information: the Municipal Consultation (available in Annex 1), which was developed and disseminated in collaboration by UNEP and UIM.

The diffusion of the Consultation took place between June and October of 2021 through the implementation of a dissemination process to the Coalition's partners and focal points. The Consultation was available in Spanish, English and Portuguese, and was disseminated among municipalities in the 33 countries of the LAC region through email, social networks and instant messaging.

The Consultation was answered by 799 representatives from public institutions dedicated to solid waste management in 377 municipalities of 17 countries in the region [4]. Of the total contributions to the Consultation, 280 were fully answered, and 519 were partially answered (See Annex 2).

[4] Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Paraguay, Panama, Peru, Suriname and Uruguay.

The results of all municipal contributions to the Consultation were organized and analyzed according to regional knowledge, extracting trends on management mechanisms and needs associated with strengthening capacities in the management and final disposal of waste in municipalities of the Latin American and Caribbean region.

To complement the information provided by the primary source, literature from different secondary information sources was considered, such as:

- Reference publications on waste management in the region.
- Reports from competent authorities, published or available on their websites.
- Official documents related to plans, programs or legislation.
- Reports and articles published by different organizations and authors, including the professional and academic sectors.

The structure of this document begins by presenting the results obtained from the Consultation, including the participation of municipalities and waste management aspects, such as waste generation and collection, recovery and utilization of waste as resources and final disposal. Following this, the regulatory framework governing waste management activity at the local level is described, along with the main challenges for advancing the closure of dumpsites and topics of interest for knowledge development and capacity building at the municipal level. The report ends with a set of conclusions and recommendations, followed by a bibliography and glossary. The survey used for the analysis is included after the bibliography and glossary (see Annex 1).

2. Results of the Municipal Consultation

This section presents the main results of the analysis of the responses that municipalities provided to the Municipal Consultation. Firstly, an analysis of the participation in the Consultation is included, followed by an analysis on the specific work that municipalities carry out in the management of solid waste.

As previously explained, the analyses include the responses of all municipalities that responded to the Consultation, whether in full or in part.

2.1

Characteristics of Municipalities and Representatives in the Consultation

With regard to the population size of the municipalities surveyed, Figure 1 demonstrates that 59% of the municipalities have less than 50,000 residents, and only 27% of the municipalities surveyed have a population exceeding 100,000 residents.

Figure 1. Distribution of surveyed municipalities by population

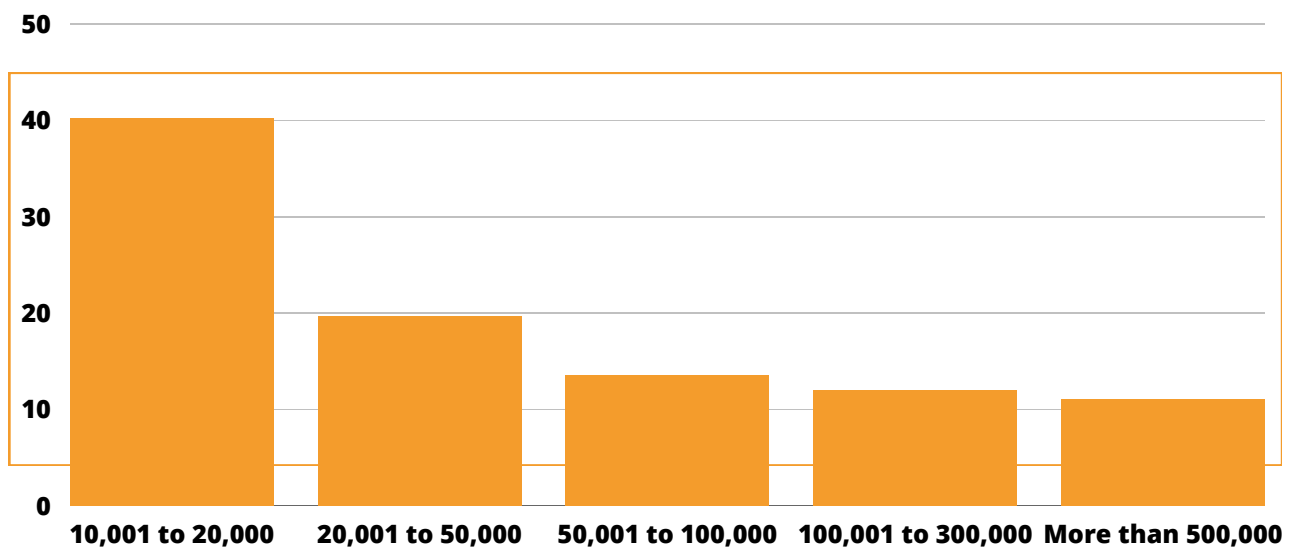


Figure 2 presents the results related to the geographical location of the municipalities that responded to the Consultation, demonstrating that 81% of the municipalities are located in the interior of the territory and, to a lesser extent, 19% of the municipalities are located in coastal areas.

Figure 2. Location of municipalities, whether coastal or inland

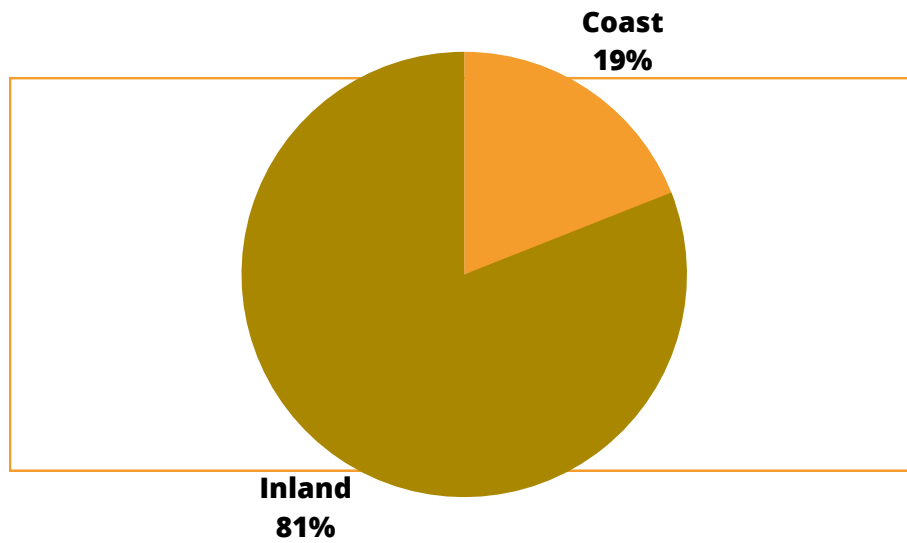
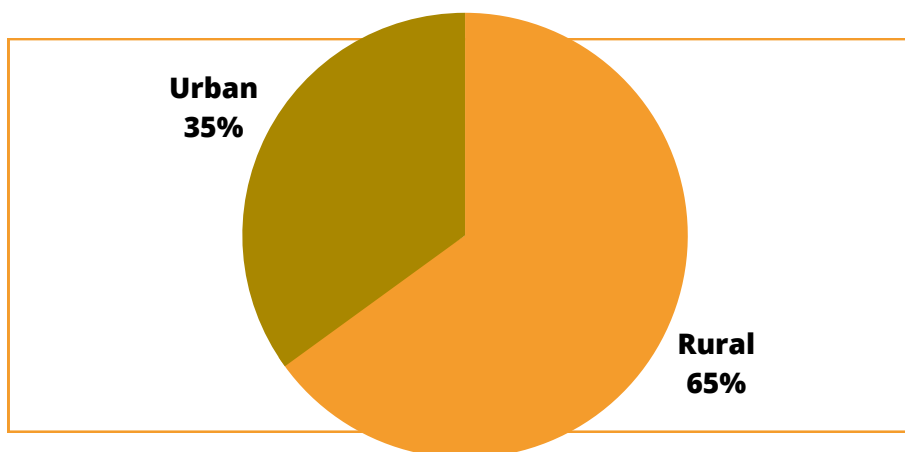


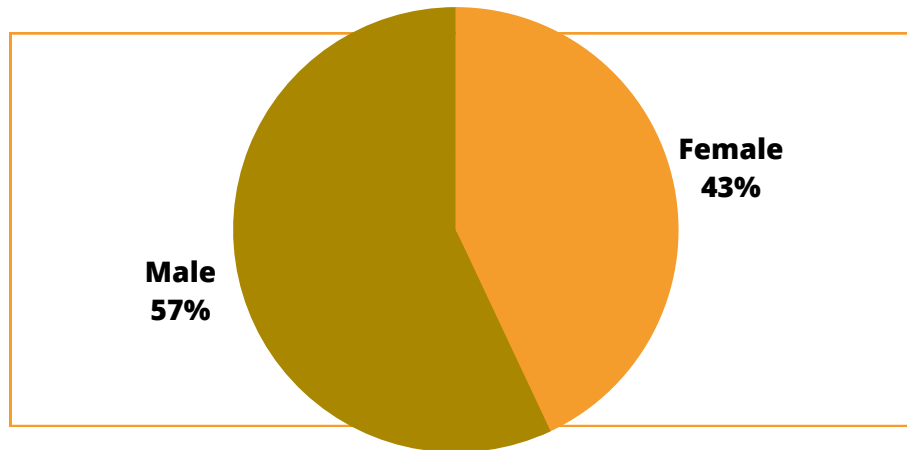
Figure 3 shows that 65% of the municipalities are located in rural areas, while 35% are classified as urban.

Figure 3. Location of municipalities, whether rural or urban



The analysis of the data represented in Figure 4 suggests a certain balance of gender representation, demonstrating a slightly higher participation of male municipal representatives (57%) over female representatives (43%).

Figure 4. Participation in the consultation according to gender



The analysis of the responses indicates that a significant proportion of participants (88%) are directly engaged in the environmental management of municipalities (Figure 5). To be exact, 87% of them are involved in managing municipal solid waste (Figure 6).

Figure 5. Is your position directly related to the environmental management of your municipality?

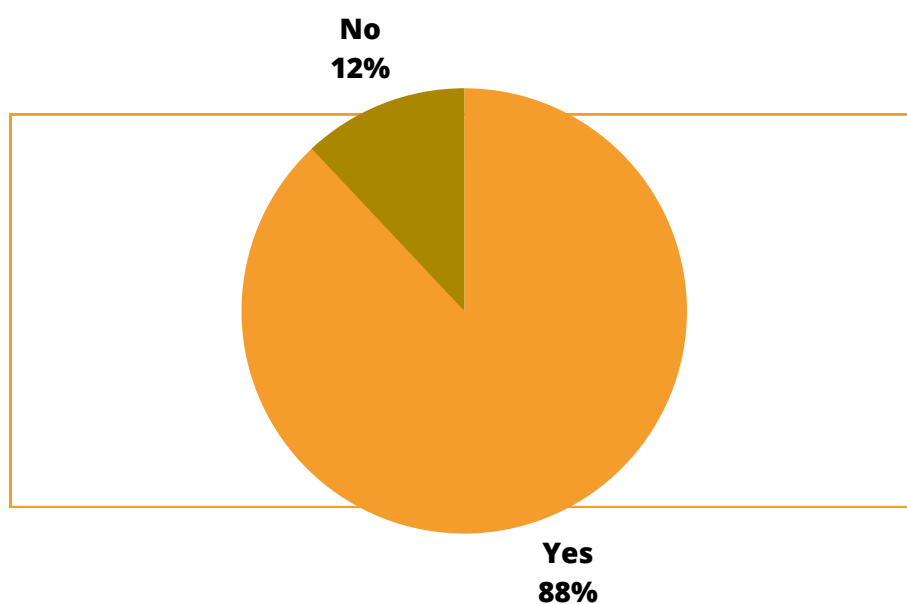
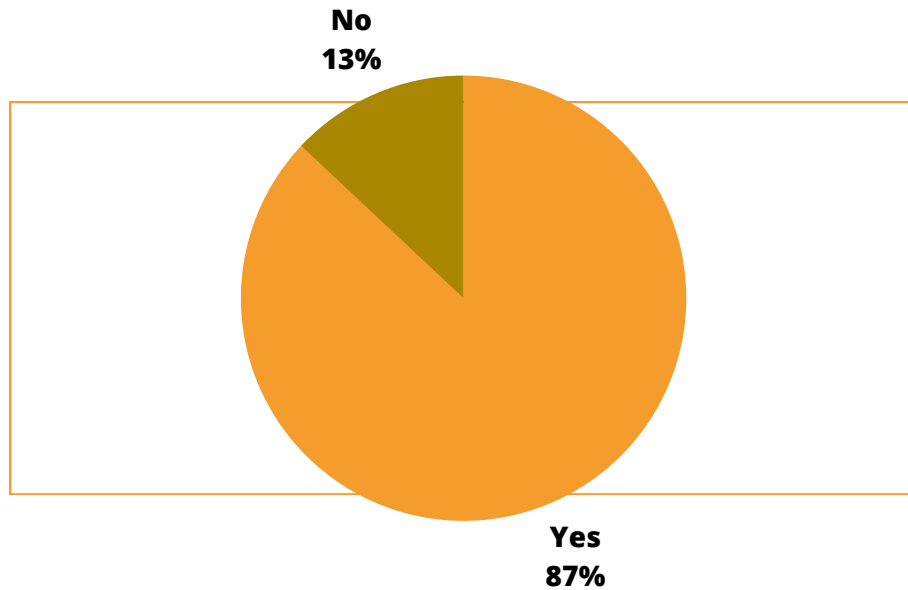
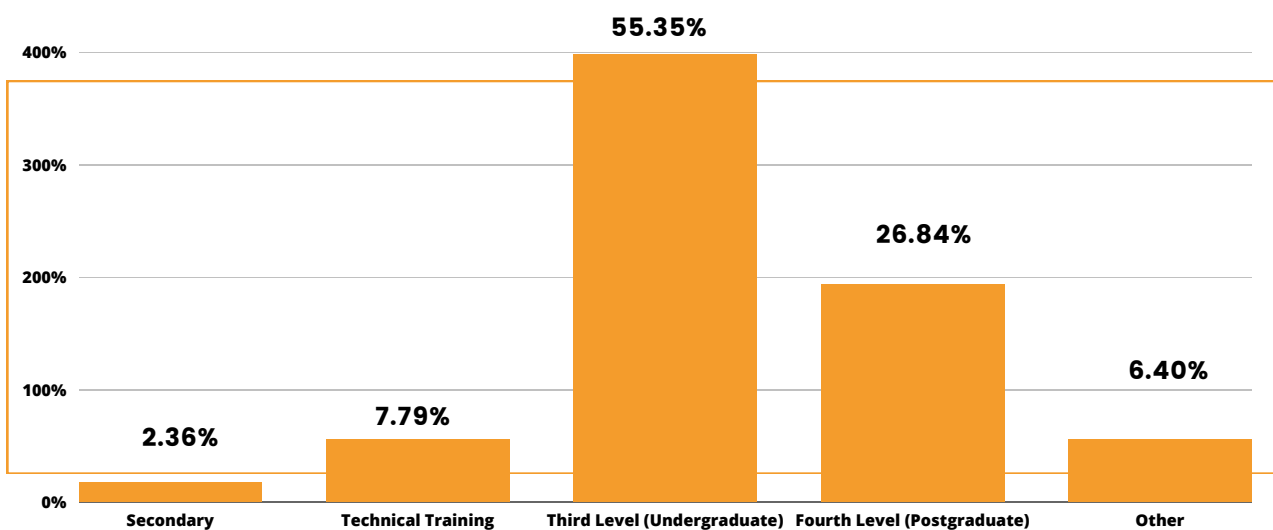


Figure 6. Is your position responsible for waste management in your municipality"



When it comes to identifying training needs in this matter, with the objective of guiding the design of a regional municipal training strategy or plan, it's worth noting that a significant number of the public representatives who responded to this Consultation have a high level of education. When adding up the numbers from the "Technical Education," "University Education" and "Postgraduate Education" columns from Figure 7, it can be seen that nearly 90% of the municipal representatives consulted have a strong educational background. Therefore, any programs or academic proposals that are suggested should consider the depth of content required to meet the needs of the public representatives.

Figure 7. What is your level of education?



Findings Related to the Management of Solid Waste at the Municipal Level

Solid Waste management is based on the process of collection, transportation, valorisation and final disposal. This includes the monitoring of these operations and post-monitoring of controlled and sanitary landfills, as well as the measures taken to limit the impacts associated with improper disposal.

Municipalities are responsible for this task according to the legislation that mandates them, the principal objective of which is to safeguard people's health. Some municipalities carry out intermediate actions aimed at promoting a strategic approach based on sustainable management of solid waste in order to move towards practices that protect the environment in a timely manner. This approach covers all sources and aspects of solid waste management, including its generation, separation, transfer, classification, treatment, valorisation and integrated disposal, with an emphasis on maximizing resource efficiency.

Based on the municipalities' management of waste control, the Consultation separately addressed each of the possible processes to be developed; The results are presented below.

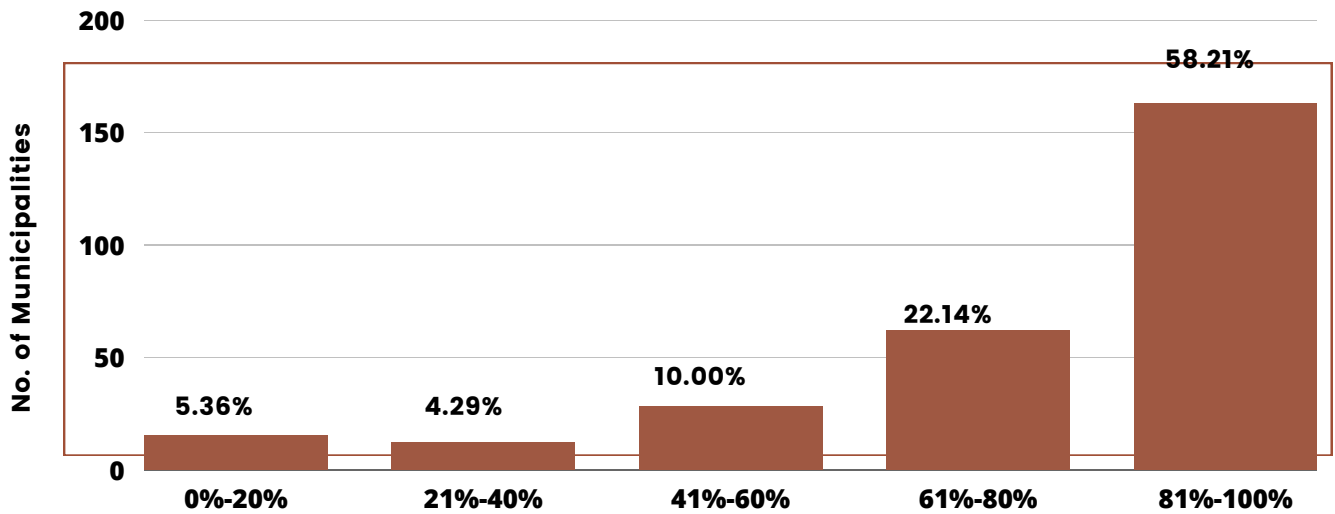
2.2.1 Waste Generation and Collection

According to the information received, 97% of the municipalities surveyed generate less than 5,000 tons of waste daily. This is consistent with the higher proportion of municipalities with less than 50,000 residents as presented previously in Figure 1, and with the fact that in Latin America and the Caribbean, the average amount of waste generated is approximately 1 kg/person/day (UNEP, 2018).

According to the data obtained in this Consultation, with the waste collection process measured as a percentage of collection coverage, 81% of municipalities report collection values higher than 60%, with 58% of them reporting more than 80%, while 19.6% report values that fall within a range of 0% to 60% (Figure 8) [5]. In the Latin America and the Caribbean region, it is estimated that more than 90% of the waste generated is collected (UNEP, 2018). However, this data reflects the influence of large metropolises, where practically 100% of the waste is collected, while in smaller municipalities or rural areas, these percentages decrease, as demonstrated by the sample obtained in this Consultation.

[5] For the analysis of this indicator, 280 answered consultations were taken into account.

Figure 8. Waste collection coverage



Despite reporting relatively high percentages of waste collection, only 40% of municipalities report the development of initiatives associated with the selective collection of different fractions of waste for valorisation (Figure 9), although the number of municipalities incorporating selective collection has increased significantly in recent years.

Figure 9. Existence of selective waste collection

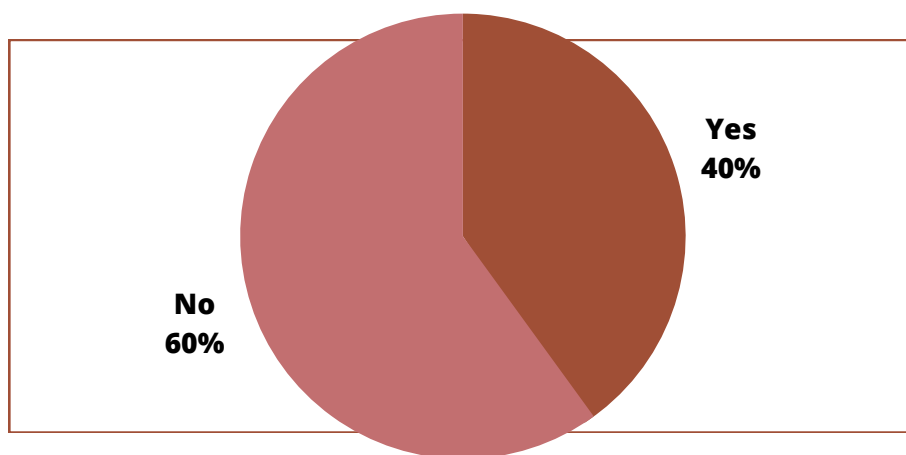
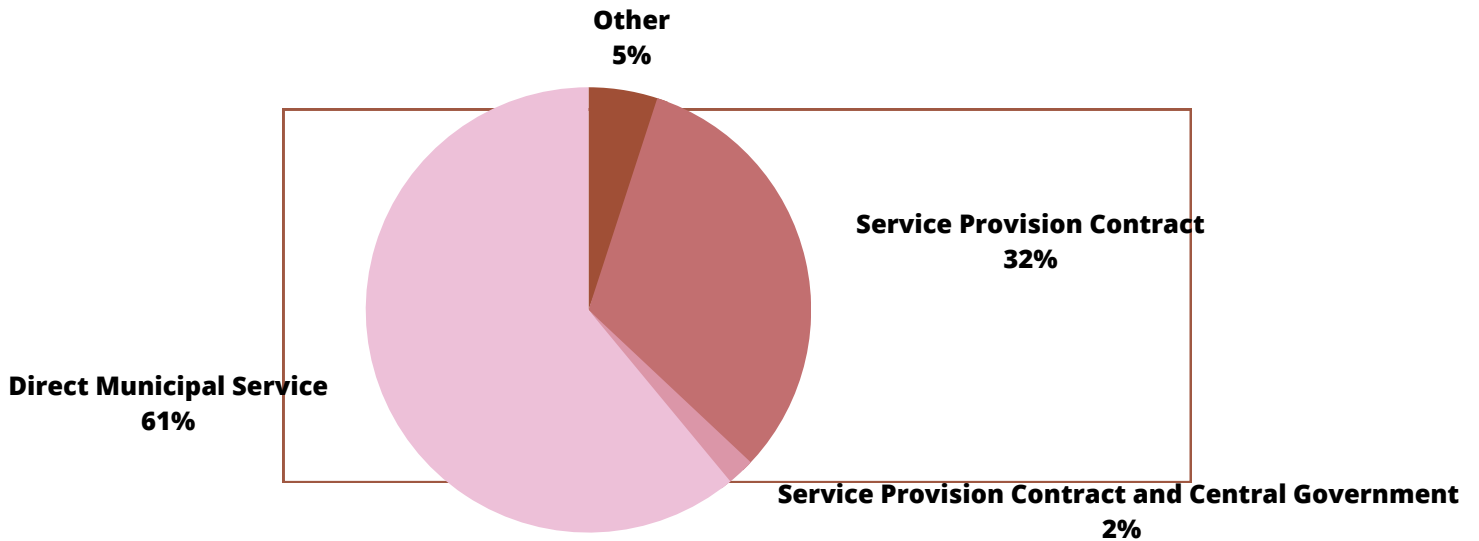


Figure 10. Method of providing waste collection and transportation services



As far as the the implementation of a specific fee for municipal waste management services is considered, 46% of the municipalities surveyed reported the utilization of this tool (Figure 11). This fee is usually collected through a property tax (40%), electricity bill (29%) or direct periodic collection from the user (28%), as reflected in Figure 12.

Figure 11. Application of specific fees for waste management services

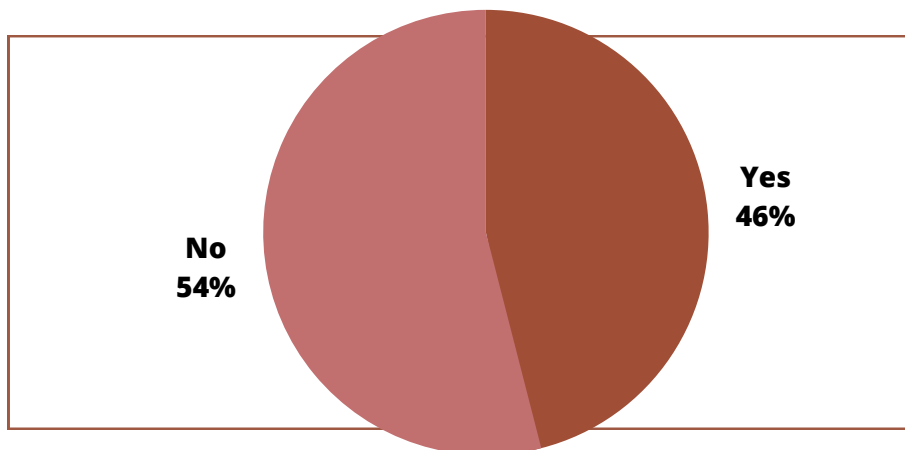
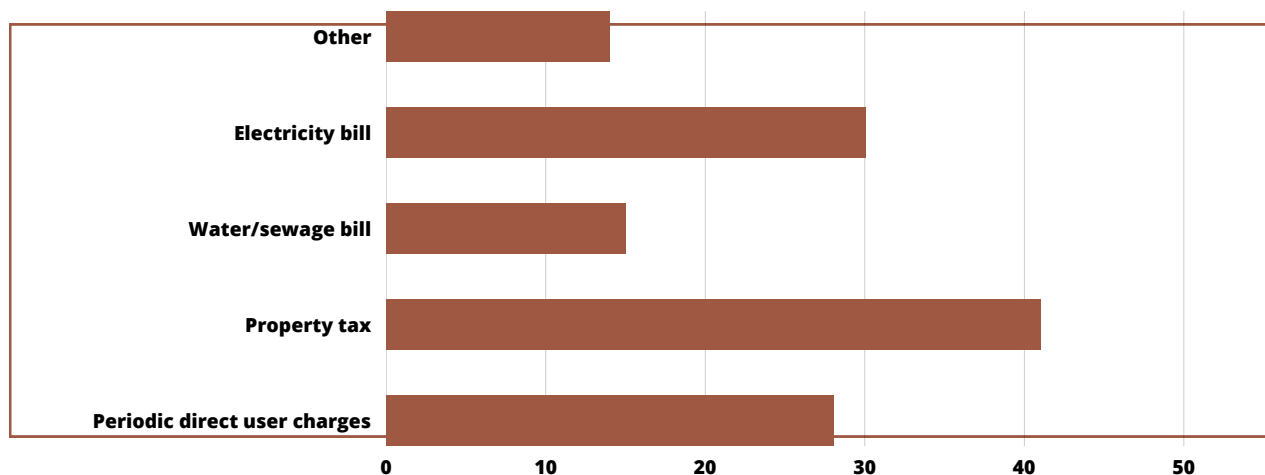


Figure 12. Methods of collecting fees for waste management services



2.2.2 Utilization of Waste as a Resource

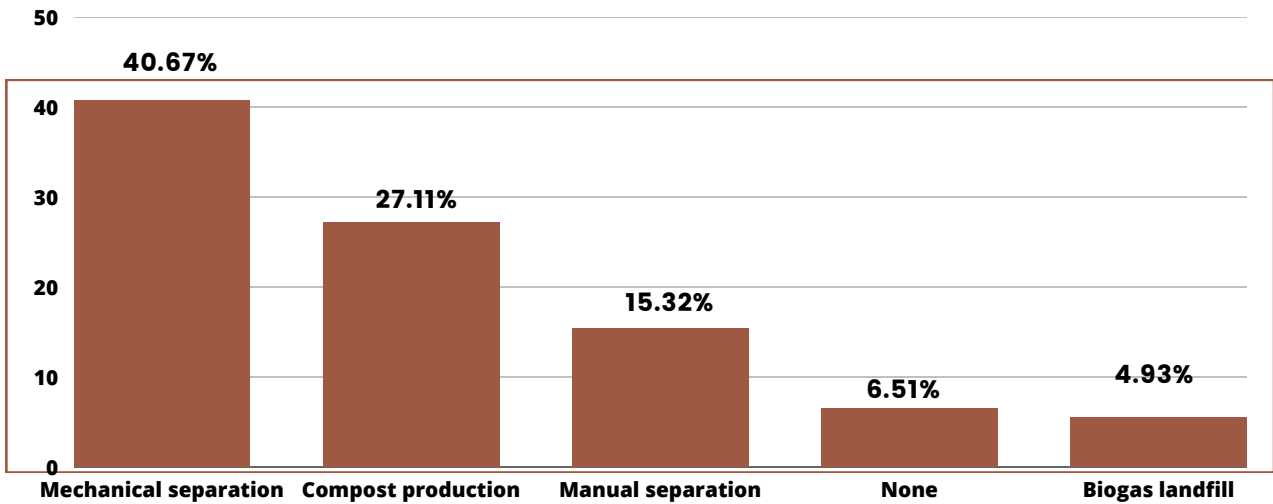
The possibility of achieving efficient recovery of resources present in waste depends largely on the previous stages of a locality's waste management system. The implementation of segregation at the source and separate collection program is especially significant in forming conditions that will create better quality materials and options for valorisation (UNEP, 2018). In the Latin America and the Caribbean region, the initial stages of recovery and separation are frequently carried out by informal waste pickers, whose inclusion, formalization and professionalization is of great importance, yet challenging for governments to implement.

According to an analysis of the data derived from this consultation, 50% of municipalities recover or recycle less than 10% of generated waste [6], which is consistent with the average recycling and recovery rates reported for the region (UNEP, 2018).

In the same context, the most widely used waste recovery technique reported by municipalities is mechanical separation, with 40.6%, followed by compost production, with 27.1% and manual separation, with 15.3%, as shown in Figure 13.

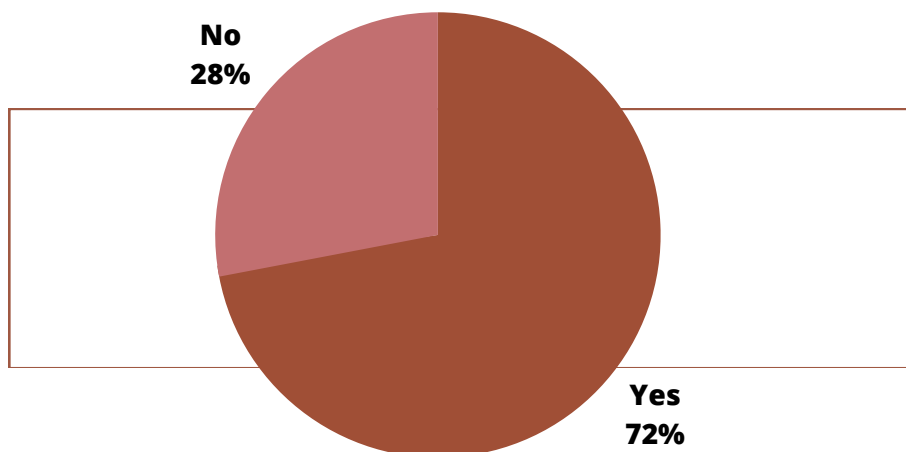
[6] Within the same analysis, it was estimated that 75% of municipalities report values lower than 30% for recycling and recovery of their generated waste.

Figure 13. Waste recovery techniques and systems used by the municipalities



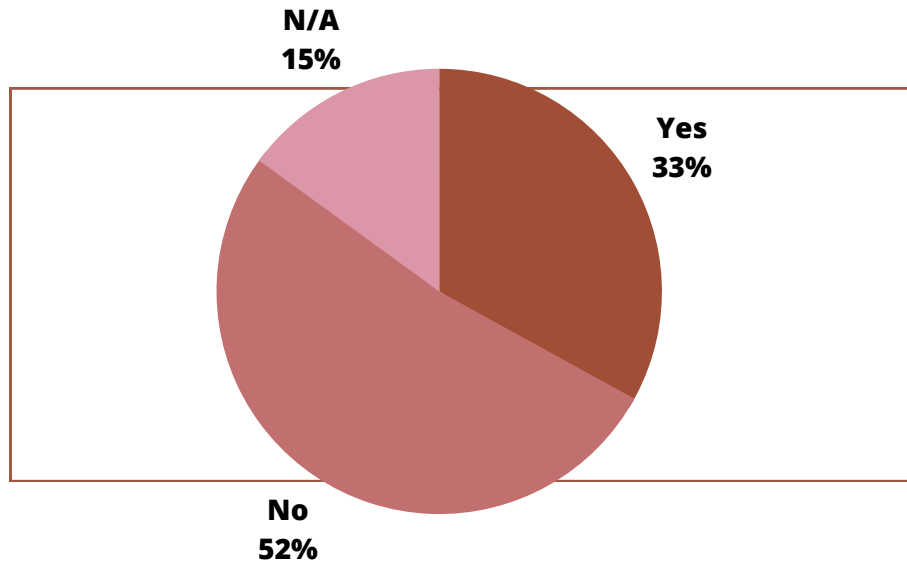
Regarding the contribution of informal waste pickers and/or recyclers to the recovery of resources contained in waste, 72% of municipalities report activities associated with this sector, which is often informal in the region. Figure 14 shows their participation in resource recovery, highlighting their relevance in ALC municipalities.

Figure 14. Informal sector participation in resource recovery



Despite the above, and in response to the query about the design and implementation of programs for the integration and inclusion of informal waste pickers, over half of the municipalities do not have such programs (52%); Only 33% do (Figure 15).

Figure 15. Presence of integration or inclusion programs for informal waste pickers



2.2.3 Final Disposal

Although final disposal sites for waste may differ significantly depending on construction and operation conditions, they are generally one of three types: dumpsites, controlled sites or sanitary landfills. In the Latin America and the Caribbean region, this situation is reflected in all countries and cities, with final disposal in sanitary landfills being the most suitable option for limiting the impacts associated with inadequate waste disposal [7].

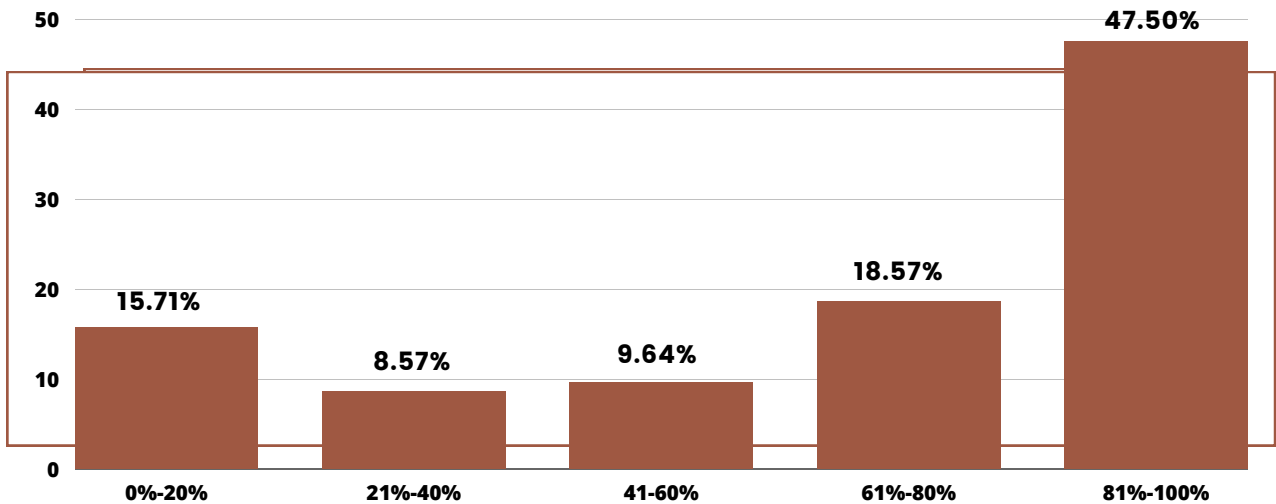
Regarding the estimation of generated waste destined for final disposal, the Consultation shows that most municipalities (approximately 70%) dispose of between 61% and 100% of the waste in final disposal; 15% of these report a final disposal range of 0% to 20%.

[7] Improper waste disposal and the presence of dumpsites affect all countries in the region to a greater or lesser extent. Nonetheless, significant differences are observed between countries. While in some cases disposal in sanitary landfills is above 75%, there are countries in which most of the waste is disposed of improperly, using controlled sites or dumpsites.

In the region, more than 14,000 sites of inadequate final disposal have been identified, including more than 10,000 dumpsites of many different sizes and characteristics. At the same time, about 2,000 sanitary landfills have been identified, in which a higher proportion of the total reported waste is disposed (around 55%), as they serve the main urban agglomerations (UNEP Baseline, 2020. Voluntary coalition for the progressive closure of dumpsites).

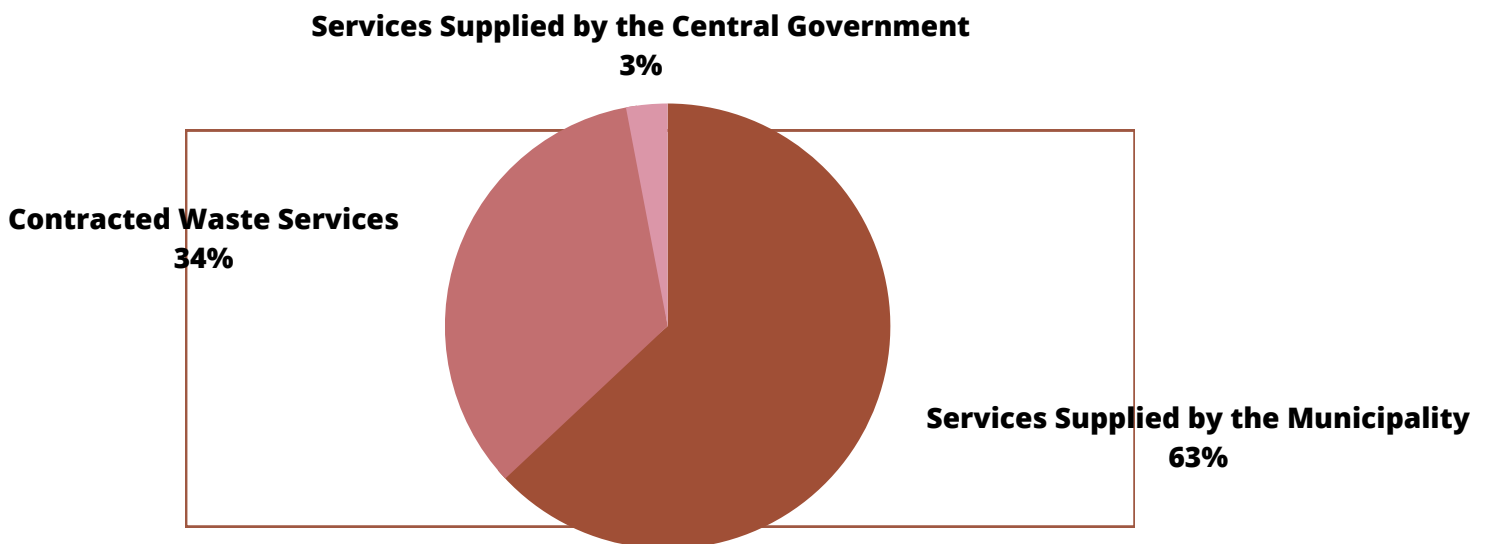
These results are consistent with the trend at the regional level of LAC, where it is estimated that 90% of waste is destined for final disposal (UNEP, 2018). However, according to this Consultation, numerous municipalities report lower percentages of final disposal, indicating that it is possible to implement effective waste recovery programs at the municipal level.

Figure 16. Estimate of waste destined for final disposal (% of total generated in the municipality)



Direct municipal service is the most represented mode of provision for final disposal, reaching a value of 63%, in comparison with third-party service contracts, which represent 34% of the municipalities that responded to the Consultation (Figure 17).

Figure 17. Modality used for final waste disposal services



Solid Waste Management Regulations at the Municipal Level

Countries in Latin America and the Caribbean have made significant progress in developing regulatory and policy frameworks to regulate waste management, and the majority of them (80%) explicitly prohibit improper disposal practices. To a lesser extent, many countries have specific plans for the progressive closure of dumpsites, but the degree to which these have been implemented poses a number of challenges (UNEP, 2021).

From a regulatory perspective, it is evident that Municipal Ordinances are the most frequently used model for establishing guidelines to ensure proper waste management in municipalities, as is the case in 64% of the municipalities surveyed. The second most common legal body in the region is the Sanitary Code, which governs solid waste management activity in 17% of the municipalities surveyed. In the remaining 19% of municipalities, other models are used, such as national laws, decrees or provincial laws (Figure 18).

Figure 18. Main legal body governing municipal activities associated with solid waste management

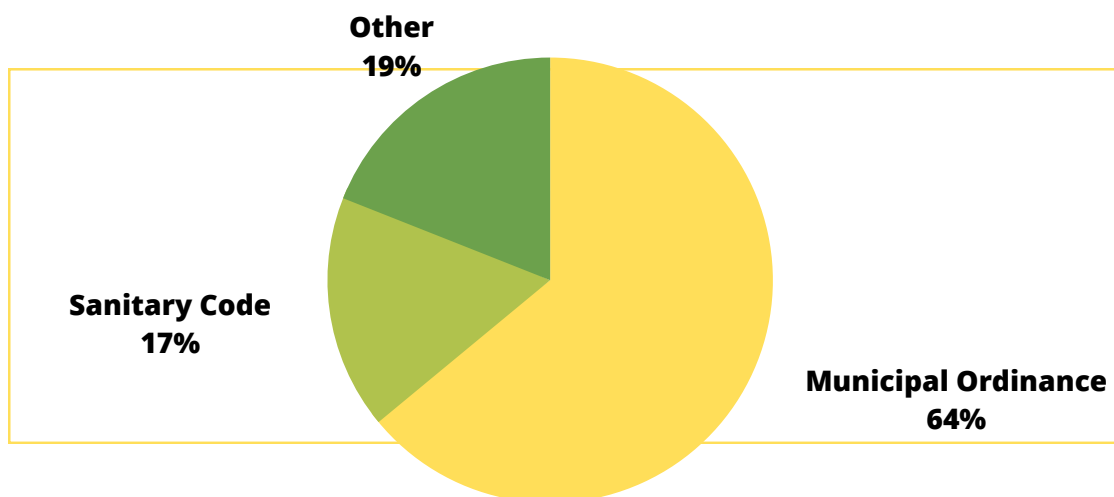


Figure 19 highlights that in 53% of the municipalities surveyed, there is a Waste Management Strategy or Plan. This also indicates that a significant proportion of municipalities (47%) do not yet have this type of instrument, which is of great importance for proper planning, organization and management of the waste management system.

Figure 19. Existence of a waste management strategy or plan

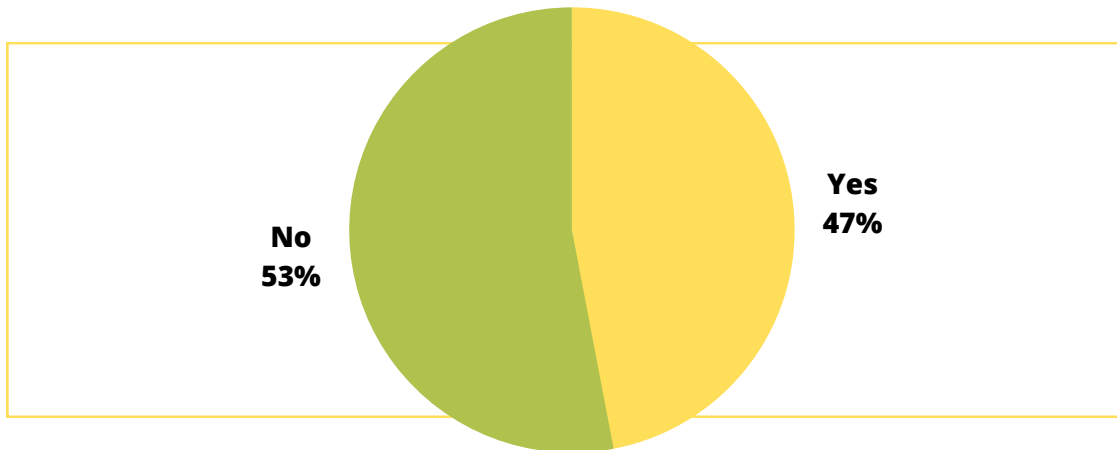
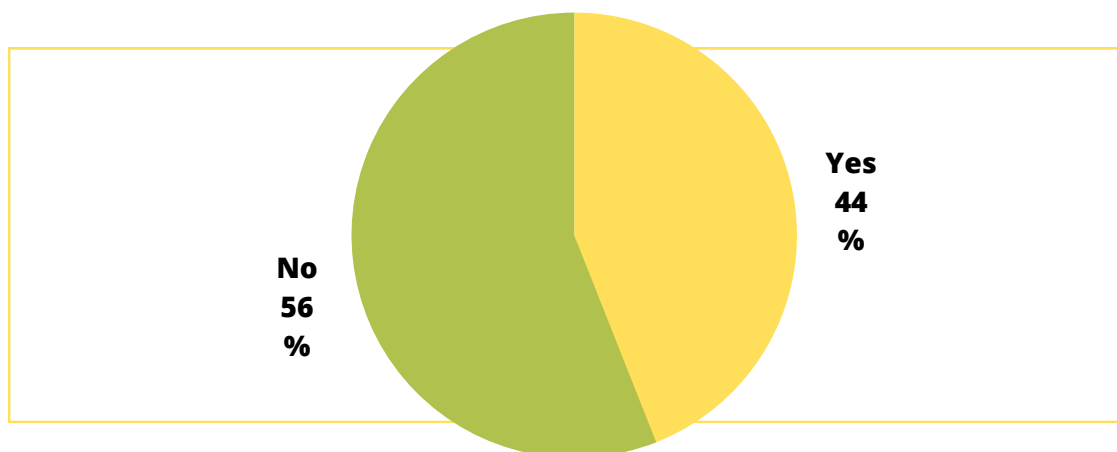


Figure 20. Existence of a policy, plan, program or regulation for the progressive closure of dumpsites.

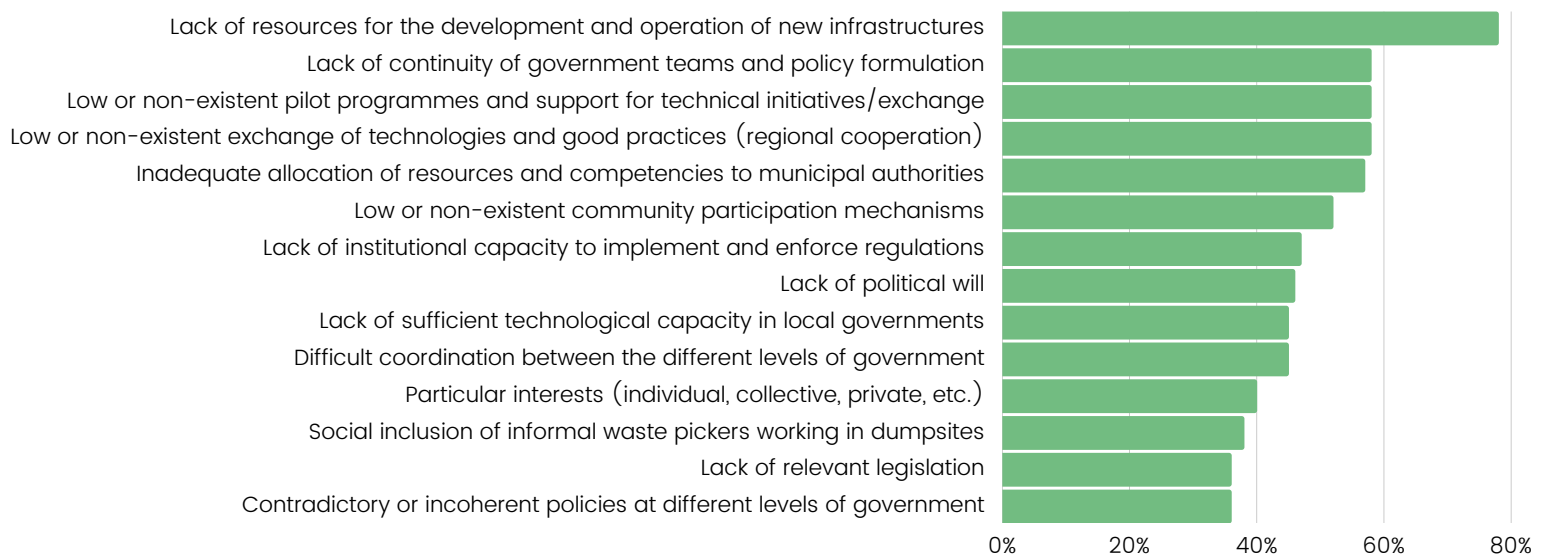


Main Challenges in Advancing the Closure of Dumpsites

The local realities represented by municipalities do not escape this general situation, and this is how the results of the more specific consultation on the main challenges in the region to advance toward the closure of dumpsites are manifested.

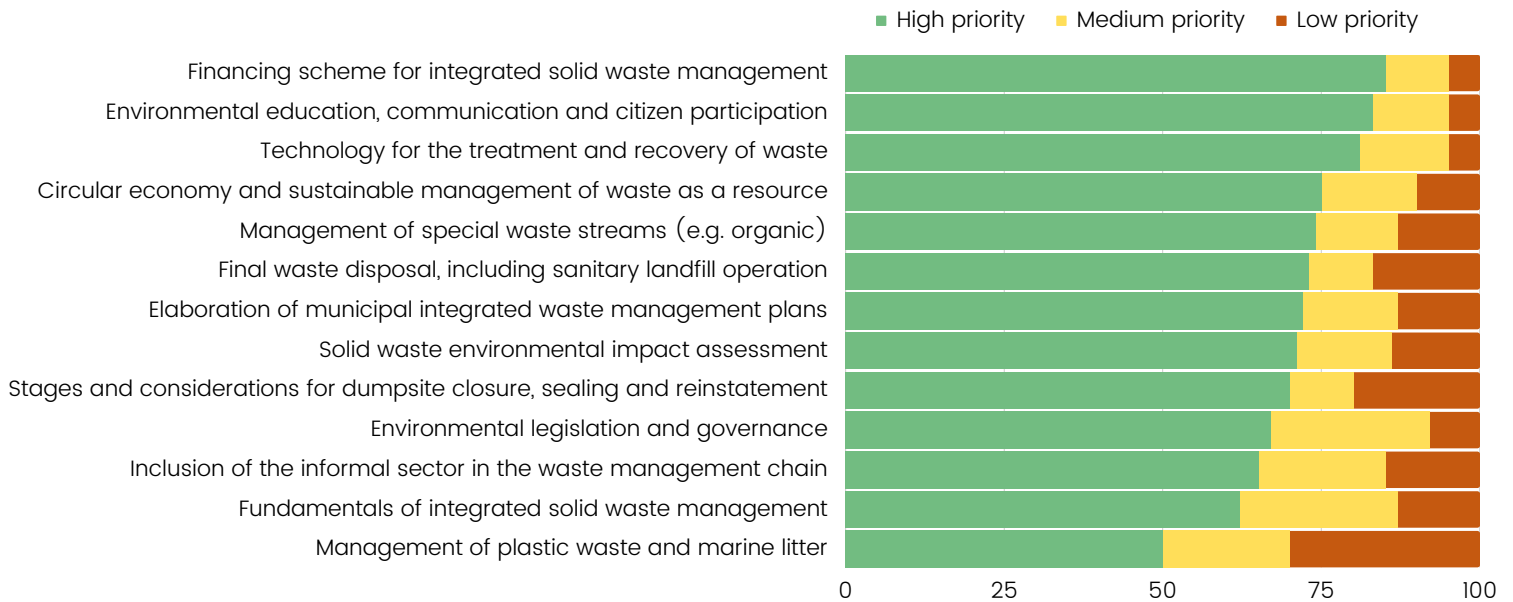
With regard to the potential challenges proposed in the Consultation, Figure 21 shows that municipalities consider practically all of the proposed statements to have a high degree of relevance, although the lack of financial resources for the development and operation of new infrastructure is particularly prominent. Similarly, four other challenges have been deemed highly relevant by 60% of municipalities: the lack of continuity of government teams and policy formulation, low or zero pilot programs, support initiatives and low or no exchange of technologies and good practices (regional cooperation), as well as the inadequate allocation of resources and competencies to municipal authorities, as shown in the figure below.

Figure 21. Main challenges in advancing the closure of dumpsites in municipalities in LAC



Capacity building and the creation of new understanding are fundamental in addressing the various approaches used and challenges facing governments and municipalities in the region. In line with one of the main objectives of the Consultation, which is aimed at evaluating the needs associated with the strengthening of capacities, Figure 22 shows the main priorities expressed by the municipalities consulted.

Figure 22. Priority areas for the development of municipal capacities for solid waste management, in order of high, medium and low priority.



As can be observed above, financial issues are of the highest importance. The most prominent strategy thus coincides with the most significant challenge discerned: financing schemes for integrated solid waste management. Other areas highlighted as priorities include environmental education, communication and citizen participation. This reinforces the idea of a demand for capacity building in the general field of waste management as well as education on technologies for the treatment and valorisation of waste. The circular economy and sustainable management of waste as a resource is also one of the highest priorities. This can be attributed to the interest on the part of municipalities to move towards these models that limit their current management practices.

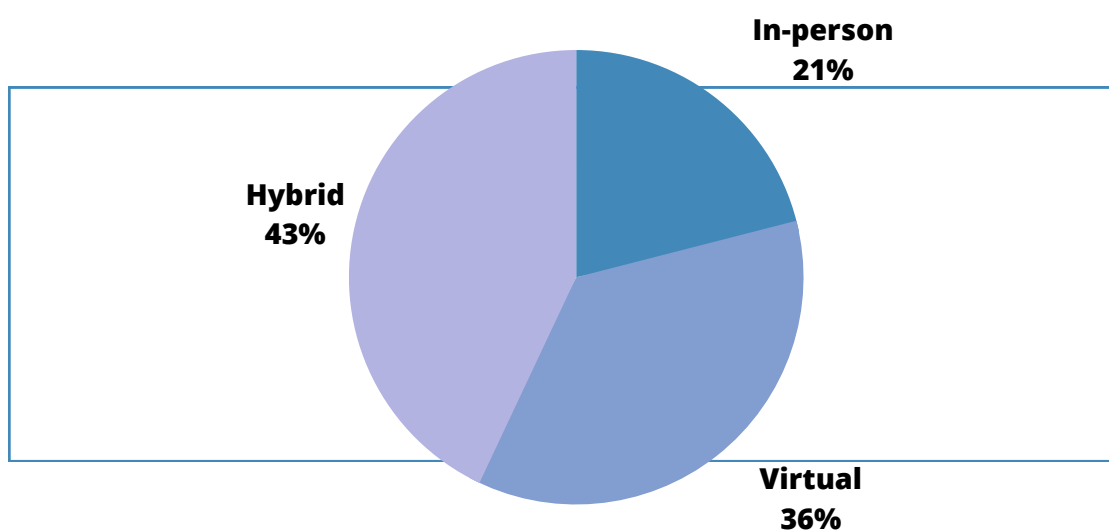
Among the lower priority issues is the management of plastic waste and marine litter. This can be attributed to the lower participation of coastal municipalities in the Consultation. However, the approach to this questioning was by means of priority scales (high, medium and low) and, in general terms, the participants considered most of the issues presented as priorities.

3. TOPICS OF INTEREST FOR KNOWLEDGE DEVELOPMENT AND CAPACITY BUILDING AT THE MUNICIPAL LEVEL

The previous results both demonstrate the existence of a diverse spectrum of priority issues of interest and reaffirm the need to establish multi-disciplinary municipal capacity-building plans that cover all phases of solid waste management as sufficiently as is possible.

On the other hand, in order to concretely plan the implementation of municipal training plans at the regional level, it is noted that, in accordance with the new post-Covid reality, it is not imperative that all plans are designed in a face-to-face modality. In fact, it is the modality least preferred by participants with 21% [8]. A hybrid approach of both in-person and virtual, with 43% approval, is the preferred option by municipal representatives for attending courses in this matter (Figure 23).

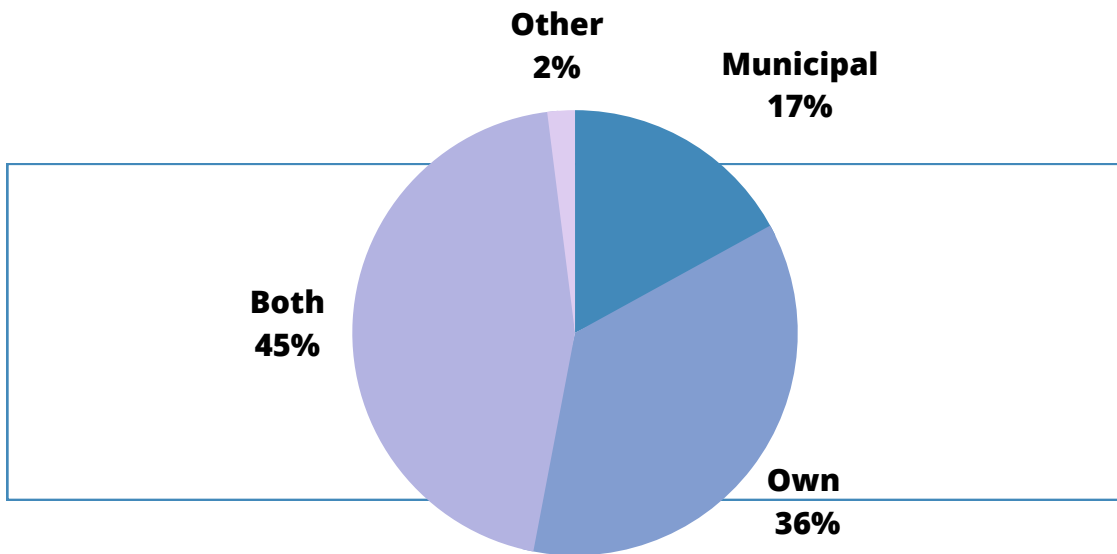
Figure 23. Preferred modality for capacity-building activities



When considering the resources used for eventual capacity building, Figure 24 shows that it is important that the training plan is designed to be freely accessible, given that only 17% of the municipalities have the resources to provide continuous training for their professionals and technicians. In fact, 80% of those consulted use their own or mixed resources for training.

[8] Take into account the pandemic status in the period in which this consultation was conducted (2021), which could have influenced these percentages.

Figure 24. Source of funding used for capacity building



4. CONCLUSIONS AND RECOMMENDATIONS



01. Participation

With regard to the participation of municipalities in the Consultation, it is noted that **799 municipal representatives from 17 countries in the region responded to the Consultation**; 519 did so partially and 280 completed it in its entirety. When considering needs in order to guide the design of academic municipal training plans or programmes at the regional level, it is important to mention that a large number of the public representatives consulted have a high level of education. It can be observed that 90% of the municipal representatives have a solid educational background in technical, university and/or postgraduate training. Given this data, the academic programmes or proposals should take the depth of theoretical and/or practical content into consideration.



02. Characteristics of the Municipalities

As for the characteristics of the municipalities responding to the Consultation, they are mainly medium or small-sized municipalities, with about 60% of them having a population of less than 50,000 residents. With regard to their geographical location, it is worth noting that 81% of these are in inland areas and 19% are located in coastal areas. In addition, rural municipalities had a higher response rate compared to urban municipalities (65% rural, 35% urban). **The realities that municipalities face with their waste management may differ according to their size and geographical location.** Factors such as terrain, climate, degree of urbanisation and the variability of these parameters in a given area will influence aspects such as planning, infrastructure siting and, eventually, the choice of relevant technology. Therefore, **programmes, policies and plans should consider these variables associated with the corresponding land use planning.**



03. Collection Values

In relation to the waste collection process, the municipal trend associated with this Consultation demonstrates that **81% of municipalities have collection rates above 60% of the waste generated, with 58% of these reporting more than 80% collection rates.** This trend aligns with collection data for the region suggested by other studies, in which it is highlighted that waste collection values in the region have increased and that there are now countries that can report average values above 90%. The primary method used for waste collection is Direct Municipal Service (61% of the municipalities surveyed). This is in accordance with the values reported at the regional level, with outsourcing through a Service Contract as the second most used modality (32%).

It is worth noting that in this area and despite high percentages of waste collection, only 40% of municipalities report the development of initiatives associated with selective waste collection as a mechanism aimed at diverting waste from final disposal.



04. Waste Collection Systems

In relation to the recovery of waste as a resource, the data suggests that the technique most commonly used by municipalities is mechanical separation with 40.6%, followed by composting (27.1%) and manual separation (15.3%). It is worth noting that less than 8% of the participants who responded to the Consultation reported that no waste recovery technique or system is currently used in their municipalities. This suggests that there is ample knowledge among municipalities about the design and operation of these recovery techniques and/or systems.

In many cases, these activities are developed by the informal sector. When asked about the presence of this sector in the municipalities, 72% report that they are making progress with their recovery systems thanks to the action of informal collectors, thus confirming the importance of this sector in the region. Despite this, more than half of the municipalities (52%) do not have integration and inclusion programmes for informal waste pickers.



05. Final Disposal

The majority of the municipalities (70%) allocate between 61-100% of the waste generated to final disposal, which is consistent with the figures from other sources defined at a regional level.

The main mode of provision for final disposal that usually operates in the municipalities is direct municipal service, reaching a value of 63%, in comparison with third-party service contracts, which account for 34% of the municipalities that responded to the Consultation.



06. Regulations

In the regulatory sphere, the analysis shows that the Municipal Ordinance is the most frequently used legal body to ensure proper waste management in municipalities (64%). The second most frequent model is the Sanitary Code, which governs the activity of 17% of the municipalities consulted. Other models such as national laws, decrees or provincial laws are used in the remaining 19% of municipalities. Along these lines, only 53% of the municipalities that responded to the Consultation have waste management strategies or plans, which creates challenges for their implementation.

On the other hand, a slightly higher percentage of municipalities have some regulation aimed at the progressive closure of dumpsites (56%). These tools exist at different levels of government, with provincial laws or municipal agreements, as well as national programmes, plans and decrees.



07. Main Challenges

In terms of the main challenges to progress in the closure of dumpsites, the first is the lack of financial resources for the development and operation of new Infrastructure. Similarly, according to the assessment of 60% of the municipalities that responded to the Consultation, the lack of continuity of government teams and policy formulation, the low or non-existent pilot programmes and technical exchange and support initiatives, the little or non-existent exchange of technologies and good practices and the inadequate allocation of resources and competencies to municipal authorities are among the top priorities that need to be addressed. It is important to note that at this point, the challenge of social inclusion of workers is not a priority issue. Likewise, 52% of the municipalities that responded to the Consultation indicated that they do not have any integration/inclusion programmes for this sector. The above results suggest some topics of interest that could also be addressed through the design of capacity-building training plans, which could also serve as a guide to address the main challenges identified in this Consultation.



08. Capacity Building

As is reflected in this Consultation, the main issues of interest for the development of knowledge and capacity building (in line with the previous challenges sections) are financial matters, reflected in the financing schemes for integrated solid waste management. Priority topics of interest include environmental education, communication and citizen participation, which reinforces the idea of a possible demand for capacity building in the general field of waste management. In third and fourth place in terms of priorities are technologies for the treatment and valorization of resources and employing a circular economy and sustainable management of waste as a resource, respectively. It should be noted that the approach to this particular Consultation was carried out according to a scale of prioritisation and, in general terms, there was a positive endorsement of each of the issues reflected.

5. GLOSSARY

Circular economy: The circular economy focuses on replicating nature's biological mechanism by incorporating the concept of an industrial metabolism based on creating and designing products that, after their first use, can be reused or transformed into a reused or transformed into a secondary raw material for a new industrial process, leaving aside the concept of final disposal of waste from the linear economy, in order to move towards an adequate management of resources. [1]

Collection: Accumulation of waste, including sorting and initial storage of waste for transport to a waste treatment facility. [2]

Composting: The controlled biological decomposition of organic solid waste materials under aerobic conditions. [3]

Controlled site: A final disposal site that is not sufficiently designed; One that necessitates improvements in operative aspects of its functioning and of management in relation to open-pit garbage dumpsites, including relative improvements oriented towards the minimization of impacts on public health and the environment. In some cases, these disposal sites have been upgraded to incorporate some of the practices associated with sanitary landfills, such as location with respect to hydrogeological suitability, levelling, compaction, leachate control, partial gas management, access control and basic record keeping. [4]

Integrated solid waste management: Refers to the strategic approach to sustainable solid waste management, which encompasses all sources and aspects, including generation, separation, transfer, sorting, treatment, recovery and disposal in an integrated manner, with emphasis on maximising resource efficiency. [5]

Leachate: Liquid that has been filtered through solid waste or by other means and has extracted, dissolved or suspended waste materials. Since leachate may contain potentially hazardous materials, leachate collection and treatment are vital steps in controlled municipal waste sites. [6]

[1] UNEP (2018). Waste Management Outlook for Latin America and the Caribbean

[2] Chalmin, P. and Gaillochet, C. (2009), op cit.

[3] Tchobanoglous, G., Vigil, S.A. and Theisen, H. (1993). Integrated Solid Waste Management – Engineering Principles and Management Issues. McGraw-Hill International Editions.

[4] UNEP (2005). Solid Waste Management (Volume I).

[5] UNEP (2010). ABC of SCP: Clarifying Concepts on Sustainable Consumption and Production.

[6] UNEP (2005). Training Modules – Closing of an Open Dumpsite and Shifting from Open Dumping to Controlled Dumping and to Sanitary Landfilling.

Marine litter: Persistent, manufactured or processed solid material that is discarded, disposed of or abandoned in marine and coastal environments. [7]

Open burning: The practice of setting fire to waste in open air. [8]

Recovery: The removal of a waste from its final disposal. In this process, recovered waste loses its status of "material destined for disposal", therefore ceasing to be a waste in the strict sense of the word. By means of its re-evaluation, it acquires the status of a "secondary raw material." [9]

Sanitary Landfill: An engineered disposal facility designed, constructed and operated in a manner that minimises impacts on public health and the environment (e.g., odours, contaminated water supplies, etc.). A landfill typically has leachate storage and treatment systems, chimneys for the control and burning of the biogas generated from decomposition and a process of waste compaction on geomembranes that maintain control over the soil when the waste is deposited. [10]

Valorisation: The whole process of extracting, storing, collecting or processing materials from the waste stream to obtain value and the diversion and directing the material into a value-added chain. [11]

Waste management: The collection, transport, recovery and disposal of waste, including the monitoring of these operations and the aftercare of waste, including the supervision of these operations and the subsequent care of controlled sites, as well as the measures adopted as a tradesperson or agent. [12]

Waste picker or waste collector: A person or family that collects recyclable materials from streets, public places or disposal sites. [13]

[7] UNEP (2009). Regional Seas Programme: working with regional seas, página web.

[8] UNEP (2005). Integrated Waste Management Scoreboard a Tool to Measure Performance in Municipal Solid Waste Management.

[9] UNAM (2017). Glossary of recycling terms.

[10] UNEP (2005), op cit.

[11] UN-HABITAT (2010), op cit.

[12] Chalmin, P. and Gaillochet, C. (2009). From Waste to Resource: World Waste Survey. Economica Ltd.

[13] UN-HABITAT (2010). Solid Waste Management in the World's Cities.

6. REFERENCES

- Chalmin, P. and Gaillochet, C. (2009). From Waste to Resource: World Waste Survey. Económica Ltd.
- Consulta municipal para el fortalecimiento de capacidades sobre la gestión y disposición final de residuos, Coalición para el cierre voluntario de los basurales en América Latina y el Caribe, PNUMA, UIM, 2021.
- Tchobanoglous, G., Vigil, S.A. and Theisen, H. (1993). Integrated Solid Waste Management Engineering Principles and Management Issues. McGraw-Hill International Editions.
- UN-HABITAT (2010). Solid Waste Management in the World's Cities.
- UNAM (2017). Glosario de términos de reciclaje.
- UNEP (2005). Integrated Waste Management Scoreboard a Tool to Measure Performance in Municipal Solid Waste Management.
- UNEP (2005). Solid Waste Management (Volume I).
- UNEP (2005). Training Modules – Closing of an Open Dumpsite and Shifting from Open Dumping to Controlled Dumping and to Sanitary Landfilling.
- UNEP (2009). Regional Seas Programme: working with regional seas, página web.
- UNEP (2010). ABC of SCP: Clarifying Concepts on Sustainable Consumption and Production.
- UNEP (2018). Waste Management Outlook for Latin America and the Caribbean.

7. ANNEXES

Annex 1. Municipal Consultation for capacity building with regard to waste management and final disposal of waste

I. SENDER INFORMATION

Country		
Province/State and location		
Municipality		
Contact person		
Gender (Mark with a "X")	Male Other	Female
Position or function developing in the municipality		
Is it your position or function directly related to the environmental management in your municipality? (Mark with a "X") Yes No		
Does your position of function have any competency in waste management in your municipality? (Mark with a "X") Yes No		
Permanency time in the position or function (expressed in years)		
Instruction level	<ul style="list-style-type: none"> • Primary school • High school • Technical school • College • Master, PhD 	
Email		

II. MUNICIPALITY INFORMATION

Country		
Province/State/Department/Region		
Municipality		
Number of resident (choose an alternative)	From 10.001 to 20.000 res. From 20.002 to 50.000 res. From 50.001 to 100.000 res. From 100.001 to 300.000 res. From 300,001 to 500,000 res. More than 500,000 rest.	
Geographic location	Coast	Inland
Do you consider your municipality to be:	Urban	Rural

III. INFORMATION RELATED TO SOLID WASTE MANAGEMENT.

3.1 Generation and Collection.

Waste generation (tons/day)		
Collection coverage (% of total)		
Does the municipality have selective waste collection (Mark with "X")		
Main modality of waste collection and transport (Mark with "X")		
Does the municipality charge any fee of the waste management service?		
If so, what is the modality of the fee? (Mark with "X"),	Property tax	Electricity
	Potable water/sewer	Periodic bill to the user
	Other	

3.2 Recovery of waste as resource

Estimated recovery of solid urban waste (% in relation of the total generated)			
System/Technique to waste recovery (Mark with a "X")	Mechanic Separation		
	Energetic utilization (Landfill biogas)		
	Compost production		
	Anaerobic digestion		
	Other (specify)		
Informal recuperation in the municipality?			
If the previous answer is affirmative, please indicate if the municipality has waste pickers integration/inclusion programmes. Please specify			

3.3 Final disposal.

Estimation of the waste destined for final disposal (% of total generated)					
Main modality of final disposal service provision (Mark with "X")			Direct Municipal Service	Direct Service provided by central government	Service Contract
Site type	No. of sites identified in the municipality	Estimtion of waste deposited (tons/day)	% of waste deposited (of the total deposited)		
Dumpsites					
Controlled sites					
Landfills					

3.4. Main challenges to advance in the closure of dumpsites

Please indicate (5) five challenges from the list that you consider most relevant to advance in the closure, sealing or reinsertion of dumpsites your municipality, classifying them with an "X", from the most relevant to the least relevant. If there are other(s), identify them in the final box.

CHALLENGE	Most relevant	High relevance	Regular relevance	Low relevance	Least relevant
Lack of legislation in the topic					
Contradictory of incoherent policis and norms in the different levels of government and for different waste fluxes					
Lack of political will					
Difficult coordination between different government instances					
Lack of institutional capacity to law enforcement					
Inadequate resource assigment and allocation of power to the municipal authorities					
Lack of continuity of governements teams and long term policy formulation					
Few or zero pilot programs and technical support/exchange initiatives to facilitate the lccal implementation					
Zero or limited mechanisms for community participation					
Lack of sufficient technical capacity in local governments					
Lack of financial resources for the development and operation of new infraestrcutre					
Private interest (individual, collective, etc.)					
Social inclusion of waste pickers working in dumpsites					
Low or lack of technologies and good practices exchange (regional cooperation)					
Other (please indicate)					

IV. GOVERNING REGULATIONS.

Main legal body which regulates the municipal activity associated to solid waste management (Mark with a "X")	<ul style="list-style-type: none"> • Sanitary Code • Municipal Ordinance • Other
What is the regulatory framework regarding waste management in your municipality?	
Does your municipality count with a Waste Management Strategy or Plan? If so, please specify	
Is there any policy, plan program or regulation, at the national or municipal level which includes the progressive closure of dumpsites?	
If so, please specify	

V. TOPICS OF INTEREST FOR KNOWLEDGE DEVELOPMENT AND CAPACITY BUILDING FOR THE MUNICIPALITY

The following is a list of topics associated with integrated solid waste management. According to the needs and capacities in your municipality, consider the potential personnel training or information requirements necessary. Using this information, please indicate the priority levels for each thematic capacity development.

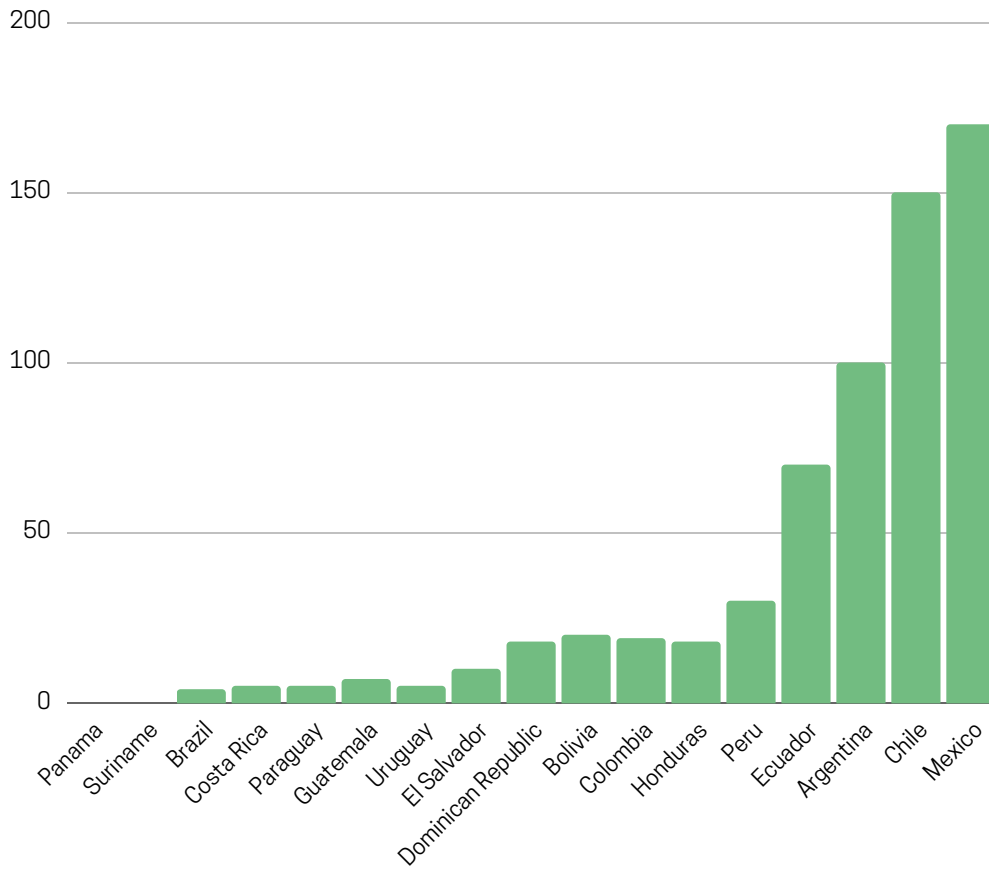
Thematic list for capacity development	Very high	High	Regular	Low	Very low
Basic foundations to the integral solid waste management					
Circular economy and sustainable management of waste as resources					
Evaluation of Solid Waste Environmental Impact					
Preparation of municipal integral waste management plans					
Technologies for treatment and valorization of waste					
Final disposal of waste, including landfill operation					
Steps and considerations for the closure and reinsertion of dumpsites					
Environmental education, communication and citizen participation					

Environmental legislation and governance					
Financing mechanisms for the integral solid waste management					
Management of special types of waste (organic, construction, demolition, electric and electronics)					
Management of plastic waste and marine litter					
Inclusion of informal sector in the waste management chain					

<p>What modality do you prefer for capacity building courses? (You can select more than one option)</p>	<ul style="list-style-type: none"> • On-site • Virtual • A combination of both
<p>What type of economic resources do you use to build capacities?</p>	<ul style="list-style-type: none"> • Own resources • Work resources • Both • Other (specify)

Annex 2. Participation of responses in the Consultation by countries in the region

NUMBER OF PARTICIPANTS PER COUNTRY



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UNIÓN IBEROAMERICANA
DE MUNICIPALISTAS
UNIÃO IBERO-AMERICANA
DE MUNICIPALISTAS



**Coalition for the closure of dumpsites
Latin America and the Caribbean**