The Economist Intelligence Unit

A study by The Economist Intelligence Unit

PROGRESS AND CHALLENGES FOR INCLUSIVE RECYCLING

AN ASSESSMENT OF 12 LATIN AMERICAN AND CARIBBEAN CITIES

With the support of IRR Regional Initiative for Inclusive Recycling

IDB FOMIN Coca-Cola PEPSICO Fundación Avina Red Latinoamericana de Recicladores

Contents

About this report

The study *Progress and Challenges for Inclusive Recycling: An Assessment of 12 Latin American and Caribbean Cities* evaluates the institutional and operational context for inclusive recycling in twelve (12) Latin American and Caribbean cities through a set of qualitative and quantitative indicators. The purpose of the study is to assess the current situation of inclusion and formal organisation of grassroots recyclers as part of the integrated sustainable waste management chain. This study does not intend to evaluate the status of the recycling chain as a whole. We recommend using this report together with other studies designed to identify and classify waste management systems and recycling markets. The majority of the research carried out for this report, including interviews and documentary analysis, was carried out between August and November of 2016. The report goes hand in hand with an interactive Excel benchmarking tool that contains the assessments of the 12 cities and scores for all indicators.

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The points of view and opinions expressed herein are those of The Economist Intelligence Unit and do not necessarily reflect the official stance of the Regional Initiative for Inclusive Recycling (IRR).

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About the Multilateral Investment Fund

The Multilateral Investment Fund (MIF) is the innovation lab for the Inter-American Development Bank Group. It conducts high-risk experiments to test new models for engaging and inspiring the private sector to solve economic development problems in Latin America and the Caribbean. The MIF addresses poverty and vulnerability by focusing on emerging businesses and smallholder farmers with the capacity to grow and create economic opportunities.

About the Regional Initiative for Inclusive Recycling

The Regional Initiative for Inclusive Recycling (IRR) is a partnership that merges public and private endeavors, and was founded and is led by the Multilateral Investment Fund (MIF), the Inter-American Development Bank's Water and Sanitation Division, Avina Foundation, the Latin American Recyclers Network (RedLACRE), The Coca-Cola Company Latin America and PepsiCo. The IRR is a multisectoral platform that convenes stakeholders in the recycling sector, seeking to strengthen the role of the private sector and improve the function of the recycling market through new business models and mechanisms to incorporate technology. In addition the IRR aims promote the creation of public policy for integrated waste management that includes grassroots recyclers so as to optimise the potential that the latter offer and improve their social and economic status.

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Advisory Panel

We herein express our gratitude to the experts that took part in the advisory panel meeting, held in Washington, DC, on May 3rd 2016, for their comments and suggestions. The opinions expressed by these experts during the meeting do not reflect the opinions of their agencies, nor does their participation necessarily imply that they endorse the report and findings.

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Experts interviewed

Experts representing an array of disciplines were interviewed in each city for the purposes of the study: grassroots recyclers, municipal authorities, recycling companies, NGO representatives and members of academia. Altogether, 90 interviews were held, an average of eight experts per city. We thank those interviewed for their contributions. A list of the experts interviewed can be found in the Bibliography section.

Introduction

The Latin American and Caribbean (LAC) region has enjoyed sustained population growth and economic well-being over the past 15 years. At the same time, the region has undergone a continuous urbanisation process that has led to 80% of the population living in cities (UN 2015). This phenomenon of growth and urbanisation goes hand in hand with higher consumption of products and an increase in the generation of solid waste. Hence, governments have gradually adopted models based on integrated sustainable waste management (ISWM). Said models are built based on public health objectives, the environment and resource management (UN Habitat, 2010). Recycling, defined as the collection and processing of waste materials for reuse (EPA, 2016), is fundamental to these integrated strategies given their contribution to the objectives of resource management (and waste reduction) and relevant environmental goals.

Recycling contributes to the preservation of natural resources, and the use of recycled material in industry reduces energy consumption and carbon emissions, as compared to the processing of virgin raw material (The Economist, 2007).

Economic growth in the region continues to attract and increase the number of people living in urban areas, driving the need for public policy designed to avoid higher environmental, economic and health costs in the future. Latin American cities must transform their productive models of "extraction, production and disposal" to a circular economy model of "reduction, reuse and recycling" (Peinado-Vara 2016). Inclusive recycling is a crucial step in this process of transformation. It is estimated that the different strategies for transitioning to a circular economy can bring about net benefits such as an increase of GDP between 0.8% and 7%, job growth between 0.2% and 3%, and a reduction in carbon emissions between 85% and 70% (Ellen MacArthur Foundation, 2015).

In every major city in Latin American and the Caribbean, there is a phenomenon that has developed with urbanization: impoverished people are seen sorting trash on the streets, open dumps, or other points in the municipal waste stream, searching for materials with potential resale value. It is estimated that as many as 4 million people in LAC earn their livelihoods through the collection, transport, separation, and sale of recyclable materials, such as cardboard, paper, glass, plastic, and metal (PAHO, AIDIS and IDB, 2010). These workers are known by different names throughout the region[1]. In this report, we use the term "grassroots recyclers", the name adopted by the workers of this sector at the First World Conference of Waste Recyclers, held in 2008, in Bogota, Colombia.

Grassroots recyclers usually belong to the poorest and most vulnerable sectors of society. Their

1 Terms vary per country: *ciruja, cartonero* and *excavador* in Argentina; *catador* and *chepeiro* in Brazil; *cartonero, cachurero* and *chatarrero* in Chile; *basuriego, costalero, zorrego* and *botellero* in Colombia; *buzo* in Costa Rica, Cuba, Honduras and in the Dominican Republic; *minador* and *chambero* in Ecuador; *pepenador* in Mexico, El Salvador, Guatemala, Nicaragua, Panama and Paraguay; *guajero* in Guatemala; *churequero* in Nicaragua; *metalero* in Panama; *ganchero* in Paraguay; *segregador* and *cachinero* in Peru; *hurgador* and *clasificador* in Uruguay, *excavador* amd *zamuro* in Venezuela; "scavenger," "reclaimer," "binner," "poacher," and "salvager" in the English-speaking Caribbean; and "*chiffonier*" in the French-speaking Caribbean.

work—performed primarily at open-air dumps—exposes them to multiple risks, ranging from precarious health and safety issues to exploitation, harassment and violence. Nevertheless, grassroots recyclers are also productive agents whose income supports not only their families but also local communities. Their work salvaging materials feeds into the various productive chains. Grassroots recyclers contribute an estimated 25% – 50% of all recycled municipal waste collected in the LAC region (UN Habitat 2010). At the same time, they contribute services to municipal governments through expanding the service life of sanitary landfills, reducing transportation costs, lessening the need to extract new materials, and providing environmental and public health benefits, such as the reduction of greenhouse gas emissions.

A decade ago, the informal sector was barely on the radar of solid waste disposal planners, local and national governments, and international institutions. Informal recycling was not recognised as an activity for many years, and in fact was at times criminalised. This perception began to change in some cities in the early nineties—including Bogota and Belo Horizonte—through local initiatives to support recyclers and improve their working conditions.

Over the past decade, informal recycling has grown exponentially in terms of visibility, organisation and being taken seriously by governments and multilateral donors, NGOs and other institutions. The first regional meeting of grassroots recyclers was held in Brazil in 2005, and the first global meeting in Bogota in 2008. To the degree that grassroots recyclers began to achieve increased recognition, the sector became more formalised through a growing number of legal frameworks and public policy. In 2009 and 2010, Peru and Brazil, respectively, were the first LAC countries to approve national legislation on solid waste, recognising informal recyclers and protecting their rights. Legislation was soon passed in India, Colombia and Chile, among other countries. The LAC region pioneered many of the critical dimensions needed to render the sector a formal one, including self-organisation, public perception, productivity, legislation and institutionalisation. The region continues to be a world leader in this field.

The launch of the Regional Initiative for Inclusive Recycling (IRR) in 2011 became yet another milestone in this regional and global process for the recognition, support and integration of grassroots recyclers in the integrated sustainable waste management chain. Initially funded by a partnership comprise of the Inter-American Development Bank's (IDB) Water and Sanitation Division, the Inter-American Development Bank's (IDB) Multilateral Investment Fund (MIF), the AVINA Foundation and the Coca-Cola Company, the IRR has become an important regional initiative designed to improve the integration of recyclers into formal processes. Subsequently supported by Red-LACRE (the Latin American Recyclers Network) and PepsiCo, the IRR has played an important role in improving the quality of the tools, professional skills and sectoral knowledge available to those who work in this field. That includes this publication, for it embodies a comprehensive methodology to assess the inclusion of grassroots recyclers in municipal integrated sustainable waste management.

Integrating the informal sector into the waste value chain is both a science and an art given that it entails multiple variables, stakeholders and interests. This, in turn, demands ample knowledge of key principles, as well as a profound understanding of local contexts, full awareness of the stakeholders involved, and a solid grasp of the analytical framework needed to compile and analyse the data. Moreover, this framework may constitute the groundwork for follow up to the results and comparisons of different cases. This study is a starting point through which to comparatively analyse multiple cases of the inclusion of grassroots recyclers at three different levels (regulatory, organisational and market), underscoring best practices and identifying the main challenges pending.

This study is the result of the combined work of a professional global community – a network of specialists hailing from diverse institutions and fields, including grassroots recyclers. The methodology was developed by The Economist Intelligence Unit's research team in consultation with IRR and a community of international experts, activists and recycling leaders, and is based on previous methodologies, such as

those used at UN Habitat (2010), Velis et al. (2012), and Wilson et al. (2015a, 2015b), as well as an IRR comparative study on 15 countries of the region: Inclusive Recycling in Latin America and the Caribbean (Accenture 2013). The methodology is based on a set of 37 qualitative indicators divided into three general categories: (1) regulatory; (2) organisational (namely developed by the recyclers themselves); and (3) market. The analytical framework was developed through an iterative process that involved dozens of specialists, and culminated in a one-day workshop at the IDB headquarters in Washington, DC, with some of the world's foremost experts on inclusive recycling.

The analytical framework was applied to 12 Latin American cities, differing in population size, degree of progress in waste management and participation of the informal sector. The results should provide a reliable snapshot of the state of inclusion of grassroots recyclers in each one of the target cities, giving us a broader view of the region and proof that this methodology can be subsequently adopted and used by other researchers. Several of the cities assessed in this study represent the most advanced cases in the region – worthy of emulation by other cities that want to develop and promote new industries. It is expected to be a useful tool for the design and implementation of actions to integrate informal waste workers in such a manner that all will benefit: the municipalities where they operate, the citizens, the recycling industry and the environment.

Photograph: Alfredo López

I. Inclusive recycling in Latin America and the Caribbean

"Informal recycling" refers to the collection, sorting, cleaning of, transportation and/or transformation of recyclable materials in the solid waste stream that is performed outside the formal system. Informal recycling encompasses a broad sector in Latin America and the Caribbean (LAC): it has been estimated that 4m people earn their living in various informal activities as part of the solid waste stream (PAHO, AIDIS and IDB, 2010).[2] Given this magnitude, the management of informal recycling bears with it social, economic and environmental implications for society. Grassroots recyclers[3] are people dedicated to collecting recyclable waste for sale, either individually or through diverse forms of organisation. In general, they work with inadequate equipment in unhealthy and even dangerous conditions. Given the nature of their work, recyclers face risks such as lack of access to waste, unstable income and social exclusion. Nonetheless, when recycling has the advantage of institutional support and is properly organised in an inclusive manner, it paves the way for new job creation in the formal market, reduces the amount of solid waste deposited at dumpsites and contributes to the development of a circular economy.

While it is true that recycling has gained importance worldwide in recent decades[4], management models tend to be heterogeneous, as are the levels of results. At the same time, there is a very clear distinction as concerns the distribution of the load between formal and informal recycling. The latter appears to be more common in less developed regions. The informal recycling rate in highly developed cities such as Rotterdam, San Francisco and Adelaide (Australia) stands at 0%, as compared to levels of up to 85% in Bamako (Mali). LAC still reports low rates of collection and recycling (close to 2.2%) (PAHO, AIDIS and IDB, 2010).

Informal recycling has become an employment option for thousands of people, with income originating from the sale of reusable material or the payment for collection services (Scheinberg, 2012). However, the majority of recyclers are people living in situations of vulnerability: immigrants or displaced populations with low levels of schooling living in abject poverty. While there are no exact figures for this sector, it is estimated that around 1% of the world's population earns its living from informal recycling (UN Habitat, 2010). In Latin America, estimates range from 500,000 (PAHO, 2005) to 3.8m recyclers (Medina, 2008).

Grassroots recyclers face numerous obstacles; their actual work generally takes place in hostile and insalubrious environments, such as streets and open-air dumpsites, where they are in direct contact with toxic materials that are harmful to health. At the same time, they tend to be stigmatised by society and law enforcement as a problem. Their income is volatile and is contingent on middlemen in the value chain –who obtain the highest margin of earnings (Medina, 2008; Global Alliance of Recyclers,

2 PAHO, AIDIS and IDB (2010).

3 The term "grassroots recycler" was coined at the First World Congress and Third Latin American Congress for Recyclers in 2008.

4 Recycling is earmarked as one of the priority actions for sustainable development. The United Nations Sustainable Development Goals (SDGs), proclaimed in 2015, have devoted a section geared toward "Guaranteeing sustainable consumer and production modalities ".Target 12.5 specifically states "by 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse".

2012). Because their work has not been legitimised, they also face problems in accessing social security services.

Even though grassroots recyclers provide much-needed services for citizens, companies and municipalities, their economic, social and environmental benefits are not adequately compensated. According to UN Habitat (2010), informal recyclers sort between 15% and 20% of recyclable materials in developing cities, resulting in a reduction of overall volume (and the cost) of waste that would otherwise have to be collected and disposed of.

Informal recycling has gained greater recognition in different national and international spaces, primarily thanks to the efforts of the sector's own organisations. Among the most important milestones are the international congresses and conferences held, such as the First World Conference on Recyclers and the Third Latin American Conference on Recyclers, in Bogota, Colombia, in 2008. These spaces have led to the identification of priorities to improve sector conditions; among them: the legalisation of the activity and its inclusion in occupational classifications; the capacity to provide training, infrastructure and appropriate equipment; access to social security; inclusion in municipal solid waste management systems as well as access to being hired by said management systems; privileged participation in the value chain for recycled material; and, ease of financing and support through cooperatives.

The LAC region is renowned for its important progress in legitimising the activity through policies that drive inclusion, and also for exhibiting high levels of organisation (Ezeah et al., 2013). Brazil sets an example for the world: it has a national policy to recognise recycling as an occupation, and there is a sophisticated institutional and organisational structure in place (Samson, 2015). In Colombia, for example, Public-Private Partnerships (PPPs) have been successfully developed (Medina, 2008).

While much has been achieved in regard to improving conditions for recyclers, there is still a long path ahead concerning the adequate structuring of the recycling sector in the region. Some of the issues identified for improvement include the low level of development of the processing industry and of the local market for recycled material, as well as the dependence on exports of the recyclable material (Accenture, 2013). In the same manner, shortcomings have been identified in the implementation of measures to sort waste at the source, as well as in the low levels of mechanisation employed for recycling processes (PAHO, 2010). In many cases, recycling depends solely on informal recycling. However, informal recycling models sometimes rival the privatised models used in integrated sustainable waste management systems. Although the latter tend to be more broadly accepted as synonymous with efficiency, it is important to recognise informal recycling due to its social and economic value (Global Alliance of Recyclers, 2012).

In order to improve conditions for grassroots recyclers, it becomes necessary to monitor the activity at all levels. For example, to measure the economic contribution of informal recycling to waste management systems in cities, it is first necessary to measure the volume that is deposited at dumpsites. The population of recyclers must also be identified, as well as their living and work conditions, to design more appropriate strategies.

Many business models are profitable and offer powerful, positive externalities; however, regulatory frameworks often block these value chains from developing efficiently. Inclusive recycling is frequently blocked by unforeseen consequences by way of regulations on transportation and commercial aspects of waste, social factors that hinder the companies from taking advantage of business opportunities in the circular economy, and market failures (asymmetry in information). The public sector can optimise growth in the circular economy by establishing appropriate rules and incentives to take advantage of the creativity and efficacy of the private sector. This would then generate value for both the companies and society (Ellen McArthur Foundation, 2015).

Photograph: Tatiana Candeal

II. Background

In 2013, the Regional Initiative for Inclusive Recycling (IRR) published the results of an initial study and comparative analysis of the informal recycling sector in 15 Latin American and Caribbean (LAC) countries. This initial assessment took into account 17 qualitative and quantitative indicators, covering three main categories: (1) regulatory; (2) organisational, and (3) market dynamics.

The IRR, together with The Economist Intelligence Unit, updated this initial assessment in 2016, renewing the framework of indicators and including new indicators, as well as fine-tuning the scoring criteria for the purpose of strengthening social inclusion activities for informal waste-pickers in the different countries.

What is the aim of this study?

The aim of the study is to evaluate and measure the institutional and operational context of inclusive recycling in twelve (12) LAC cities through a set of qualitative and quantitative indicators. The chief purpose is to measure the inclusion of grassroots recyclers and identify those situations where they are excluded from recycling processes.

The indicators and reference model have been designed in such a manner as to render them dynamic so that the study can be updated (ever year to two years) so as to reflect progress attained (or setbacks) in the various crucial aspects relevant to inclusive recycling. To the degree that this sector evolves, it will become necessary to adjust and renew the framework of indicators to reflect changing dynamics.

Two main products emerge as the result of research:

- *An interactive benchmarking model* (in Excel format) presenting the indicators, the comparative city assessments and the results of the study via a set of functions, including an interactive function for self-assessment and weigh adjustments.
- *In this report*, we present the final results of the study, the main conclusions regarding all categories and cities, city assessments, the methodology employed, a glossary and references used.

The indicators model has three main purposes:

1 To describe the context for inclusive recycling in 12 cities (to be used as a knowledge tool).

2 To compare the inclusive recycling context of the 12 cities (used as a reference tool).

3 To promote dialogue and encourage a change of policy in the sector (to be used as a tool for public policy purposes).

What does "inclusive recycling" entail, and what might the ideal scenario or model look like?

The term "inclusive recycling" is understood as those waste management systems that prioritise recovery and recycling, recognising and rendering formal the role of recyclers as key

stakeholders in these systems (boxes 1 and 2; graphs 1 and 3). The systems are built through regulations, public policy, initiatives, and programmes and actions undertaken by the public and private sectors.

Recycling with Inclusion represents a new paradigm in the sustainable management of solid waste, incorporating the "3 R" environmental concept (Reduce, Reuse and Recycle), and yet another socio-economic "3 R" concept, namely:

- **Collection** of waste separated at source (*Recolección* in original Spanish)
- **Recognition** of the role of recyclers
- **Remuneration** for the service provided

The IRR and its partners promote the development, implementation and consolidation of inclusive recycling systems in the region, placing particular emphasis on:

1. Improving the socio-economic situation of grassroots recyclers.
2. Facilitating their access to formal recycling markets.
3. Promoting the creation of public policy for the integrated management of solid waste, including recyclers.

The ideal scenario encompasses much more than just improving working conditions for grassroots recyclers; it includes the gradual, negotiated construction of an inclusive model for the management of solid waste that will benefit: 1) public institutions, 2) society (adhering to environmental, public health and social standards), 3) companies that generate waste, 4) companies that are dedicated to the transformation of waste, and 5) grassroots recyclers. One of the underlying objectives of this ideal scenario is the uninterrupted growth of recycling activities. The ideal waste management system should be based on open and participatory institutions and legislation, with a greater degree of adoption by the public sector of source separation and more efficient collection and classification systems. In addition, an ideal system would result in a continual reduction of informal labour and the vulnerability of recyclers, due to their growing levels of organisation and increased negotiating capacity.

There are many possible ways to achieve inclusive recycling; the one chosen by a given country or municipality will be contingent on its specific institutional and social context, as well as on its generation of waste. Nevertheless, in the transition from current situation to ideal situation, it is fundamental to place grassroots recyclers in key roles in any attempts to reform the system, beginning with the identification of the population and its needs (through a census, for example), participatory processes for the design of policy, and taking into consideration their basic rights (education, medical care, safety, the protection of children and gender equality). It is also important to bear these aspects in mind when designing and putting into practice actions to increase the value added of the work of informal recyclers, improving their working conditions and reducing the degree of informal labour and vulnerability.

Indicator framework

The indicator framework presented in this study reflects the idea of greater inclusion and measures the inclusive recycling situation in twelve (12) cities of the region as compared to this ideal scenario[5]. It is not intended to be an integrated sustainable waste management framework because it was specifically designed to focus on the inclusion of grassroots recyclers. The intention is not to measure recycling per se, but rather to measure the inclusion of recyclers. We recommend that this study be used in conjunction with studies that describe waste management systems and markets, together with contextual studies. At the same time, the study assesses a limited sampling of what is happening in the cities of LAC, which in itself represents a limitation.

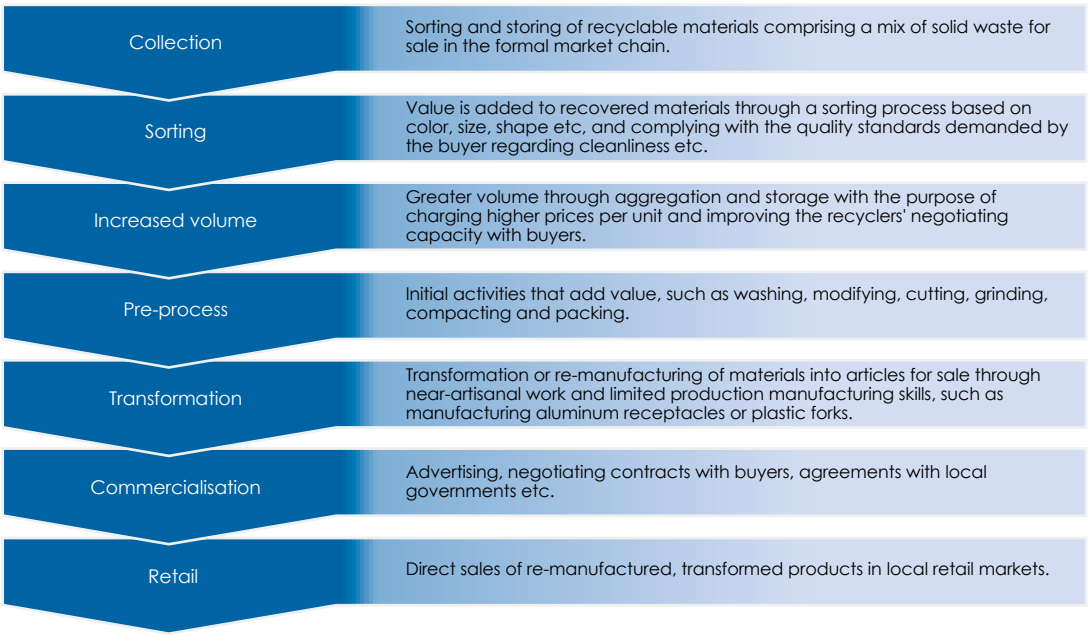
5 There are various approaches and analytical frameworks to describe inclusive recycling and waste management: see, for example, UN-Habitat (2010), Velis *et al*. (2012), and Wilson et al (2015a, 2015b) among others.

Definition of "grassroots recycler"

The IRR uses the term "grassroots recycler" to describe workers (both formal and informal) in the recycling value chain. This refers to people who are dedicated to the recovery and sale of recyclable materials as part of the municipal solid waste stream. While the concept of municipal solid waste management encompasses the entire solid waste stream, in general grassroots recyclers collect or recover specific categories of material (for example, PET, paper, glass, metal). Grassroots recyclers can intervene at any point in the waste stream, but in general this can be divided into four categories:

1. **Street peddlers**: recyclers with their own means of transportation who collect, buy or barter for materials door to door and who have not yet become part of the official solid waste stream.
2. **Street collectors**: recyclers with their own means of transportation who recover materials from domestic or public waste containers before formal collection takes place.
3. **Recyclers in trucks**: recyclers with transportation who tend to be municipal employees or private enterprise employees, who collect material in an informal manner for resale and who circulate in trucks on waste collection routes.
4. **Recyclers at dumpsites**: recyclers who do not move around but rather operate at dumpsites and recover recyclable materials deposited by trucks for final disposal.

Graph 1: The recycling chain



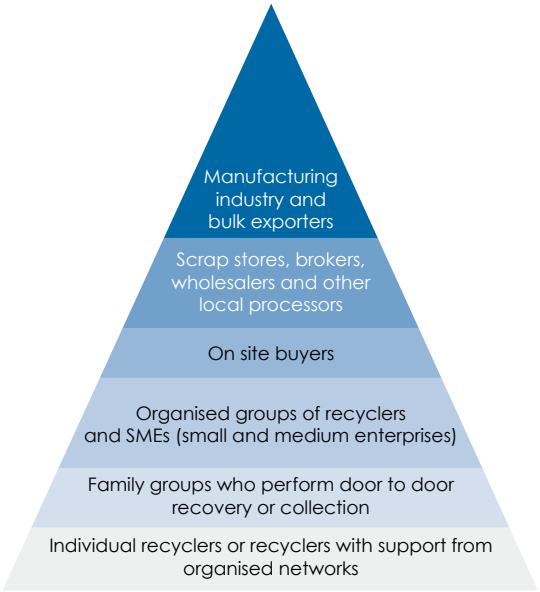
Source: IDB/IRR. (2013, p.14 and 76); Accenture Report (2013).

In order to reflect the dynamics of inclusive recycling with regard to the ideal scenario, the initial assessment is organised into three main categories, comprised of 10 qualitative indicators, with a total of 37 sub-indicators (associated questions)[6]:

1. A regulatory category to assess the existence or lack thereof of a legal and institutional framework that can support waste management systems at the country and city levels, establish conditions and limits so that recycling stakeholders can operate, and examine the mechanisms of specific policies that are being implemented to strengthen or begin integrating grassroots recyclers as formal participants involved in the value chain for solid waste management.
2. An organisational category to capture the various organisational modalities and the empowerment of grassroots recyclers; identify how to establish networks and associations to ensure that they have a say in the processes for drawing up policies and social reform, and analyse the development of organisations and financial mechanisms to assist in underpinning their position and negotiating capacity in recycling markets.
3. A market category to analyse how grassroots recyclers interact in the broader recycling field (including access to materials, relations with middlemen and the marketing of recyclable waste) as well as their working conditions in the value chain, and ranging from the feasibility of accessing materials, the availability of facilities for storage and sorting, and securing fair payment in the value chain (graph 2). At a later stage, the goal will be to attain formal recognition of legitimate public services provided by grassroots recyclers with the sustainable waste management system and through fixed salaries.

These three categories contain a set of assessment criteria: indicators, sub-indicators and questions to describe institutional, economic and social environments in which informal recycling within the municipal waste management system takes place.

Graph 2: Stakeholders in the recycling value chain



Source: IDB/IRR 2013.

In order to develop the indicators it was necessary to balance these aspects, bearing in mind not only the benefits for grassroots recyclers but also for all of society and for the environment. The idea is for the framework of indicators to be inclusive and at the same time sustainable in social, environmental and economic aspects. More regulation and/or mechanical aids do not necessarily counter the sustainable subsistence means of grassroots recyclers. Changes can be made in such a manner as to offer new economic opportunities. The secret resides in implementing the changes gradually, accompanied by support activities (for example, training, institutional support and support for companies) to help prepare grassroots recyclers to operate in a safe, sustainable and profitable manner. Hence, the sub-indicators are designed to foster the coexistence of these potential competitive forces, and at the same time seek greater inclusion and overall institutional and economic progress.

The objective of the indicators is to take into account the role of all stakeholders in the inclusive recycling process. Stakeholders who are part of the waste management scene include national, regional and municipal governments, members of the formal private sector, organisations, cooperatives, associations and SMEs comprising grassroots recyclers, civil society or-

6 We have kept the three categories used in the original framework and in the report published in 2013. See Accenture (2013).

ganisations, academia, and the public at large. Nevertheless, the fundamental role that local governments (municipal and city) play in inclusive recycling is recognised; for this reason, a large number of the indicators refer to this level of government. This is due to: (i) sustainable management of waste is one of the basic responsibilities of municipal administration[7]; (ii) using existing recycling networks may help to attain local economic and environmental objectives; and (iii) informal recycling (and, in a more general manner, informal work) is a large sector in the LAC region, finding its origin in the labour market's irregularities, deficient public services and inadequate regulation (Loayza et al., 2009). While all parties involved have a role to play in promoting inclusive recycling, it is the governments who play the lead role in meeting

Activities of grassroots recyclers in the recycling value chain

1. *Collection*
2. *Sorting*
3. *Increase in volume (aggregation and storage)*
4. *Pre-processing*
5. *Transformation (if organised)*
6. *Marketing (if organised)*
7. *Wholesale (if organised)*

Source: IDB/IRR (2013)

Graph 3: In what part of the solid waste management flow do grassroots recyclers work?

Source: Adapted from UN-Habitat (2010, page 27) and IDB /IRR (2013, page 15)

7 See the explanation on the role of the government and stakeholder groups involved in integrated sustainable waste management in the UN-Habitat report (2010, page 142: "While national authorities create the boundary conditions, it is the municipal authorities who are responsible for sustainable waste management in a city – that is, for establishing the legal, regulatory and financial boundary conditions that make it possible to provide the service or extract materials for valorisation. Historically, solid waste is a municipal responsibility because municipal authorities are the main stakeholder responsible for public health: they receive the blame if the service is not provided or falls below an accepted or agreed-upon standard. This does not mean that they have to provide the service on their own, especially when a range of other stakeholders are looking for opportunities to plan the system, make investments, provide the service, organise users, supply the economic actors with equipment, valorise materials, and have cleaner neighbourhoods."

the need to provide sustainable waste management services and to provide assistance to one of the most vulnerable groups in society.

Who is the target audience for this study?

The Regional Initiative for Inclusive Recycling (IRR) is committed to supporting increased capacity and coordination between the government, the private sector, the media, academic circles and organisations of grassroots recyclers, in order to increase inclusion of grassroots recyclers and strengthen a culture of recycling in all countries in the LAC region. The study is aimed at these same actors, and offers a practical tool that can be used as a knowledge exchange and as a benchmark for progress in each city in the creation of environments conducive to inclusive recycling. The principal objectives of the study are to invite the main stakeholders in the solid waste management system to take part in the debate and promote the adoption of more inclusive policies for grassroots recyclers—policies that will be compatible with the well-being of society and the environment as a whole.

Photograph: Tatiana Candeal

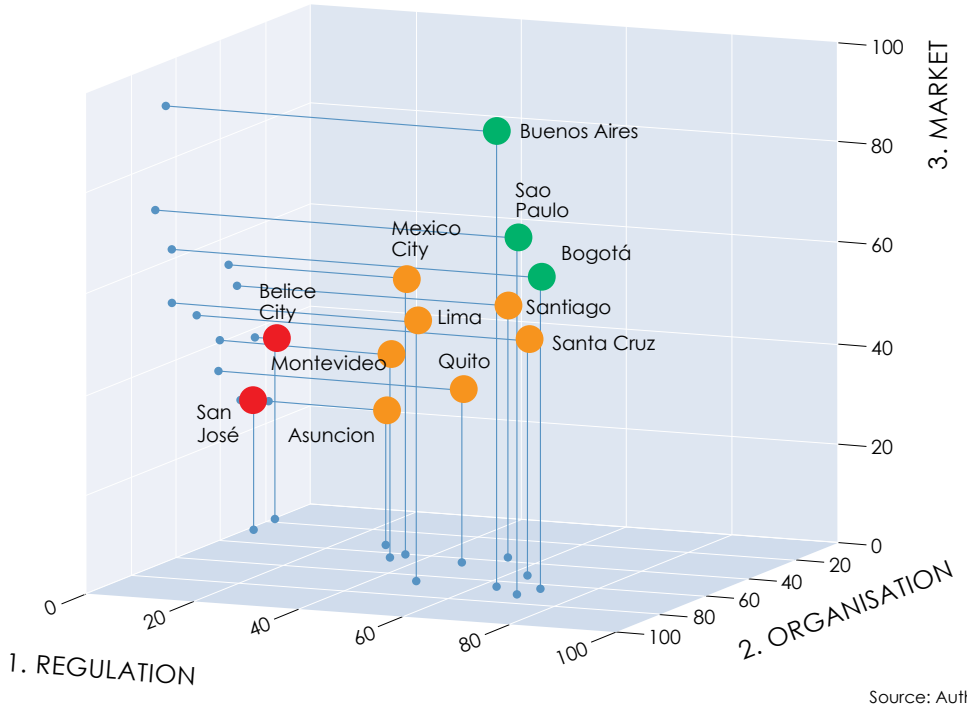
III. Key findings

In an effort to capture the dynamics of inclusive recycling, the evaluation of the 12 cities is organised into three main categories: 1) a **regulatory** category; 2) an **organisational** category 3); and a **market** category. This section highlights the key findings from the evaluations in the three categories. Figure 4 contains the total score per city in each of the three categories.

The three categories contain a total of 10 qualitative indicators and 37 sub-indicators (associated questions). Following a methodological guide, these 37 sub-indicators were evaluated for each city, and a score of 0-100, with 100 representing the best score, was assigned to each one. Lastly, each indicator was equally weighted to achieve a total score per category. Details on the research, scoring and weighting can be found in the methodology section.

The market category stands out for having the highest score among the three categories, fol-

Figure 4: Total score per category (0-100)



Source: Authors

lowed by the regulatory category, and lastly the organisational category. None of the three categories exceed the 50-point average, suggesting that there is much to be done towards the inclusion of grassroots recyclers in integrated sustainable waste management systems.

São Paulo, the City of Buenos Aires and Bogota lead in all three inclusive recycling categories

This study analyses 12 cities within the region, each varying in size and stages of development regarding solid waste management and inclusive recycling. The case of São Paulo (Brazil) stands out in the majority of categories due to the presence of fairly solid participatory policy at both the local and national level. At the same time, Brazil is one of the LAC countries that has made the most advances in this field over the last decades, as is evidenced by the majority of the indicators. The City of Buenos Aires also places within the top three across all three categories. The City of Buenos Aires shows encouraging scores and significant results with regards to regulations, as well as in recognising the service provided by recyclers, and the productive and organisational level of formal organisations. Bogota also obtains high scores, given its history in the matter. Bogota has solid recycling regulations, and recycling organisations have made themselves visible to national organisations. As a result of their efforts in Colombia, grassroots recyclers are recognised as providers of public sanitation services, and as such they have a right to compensation similar to that obtained by providers of non-recyclable waste.

Regulations and policies that integrate recyclers are fundamental to achieving greater inclusion

The integration of grassroots recyclers in municipal Integrated Sustainable Waste Management (ISWM) programmes is a new issue, and one that is currently under development. From the analysis, it was observed that a significant difference exists in the implementation of inclusive recycling processes between the cities analysed. A large number of the cities analysed have legal frameworks that focus on inclusive recycling and promote the formalisation of recyclers. This is the case in Bogota, the City of Buenos Aires, Lima, Quito and São Paulo, with each receiving the maximum score in the implementation of local inclusive regulations (question #2). Although regulations do not exist in other cities, (Asuncion, San Jose and Santiago), there are programmes aimed at promoting recycling through recyclers. One of the current risks in the region is the vulnerability of public policy implementation due to changes in local government given that policies are not linked to the regulatory system by way of laws or decrees. The cities of São Paulo and the City of Buenos Aires stand out in this context by having robust legal frameworks that are resistant to changes in leadership (question #3).

The assignment of municipal budgets to promote recycling is based on the development of a legal framework that promotes inclusive recycling. Some cities (Bogota, the City of Buenos Aires and São Paulo) have taken important steps in this sense, with the occupation of recycler legally recognised as a service provider, and municipal budgets allocated to paying the services provided by recyclers (questions #5 and #6).

Legislation that promotes training and education processes related to inclusive recycling becomes fundamental to the sustainability of the system, since citizens, as the main generators of solid waste, must be constantly included in these types of programmes. In some cases, there are recycling incentive programmes for citizens (Bogota, Lima, São Paulo, and Santa Cruz). However, these need to be strengthened within the framework of inclusive recycling (question #12).

Greater transparency and improved data are required in solid waste management information systems

The main challenges identified in the evaluations reside in the lack of public information available on the topic of inclusive recycling, and the level of access that recycler organisations have to the ISWM system's call for tenders. In terms of the ISWM system tendering process, none of the cities were found to be fully inclu-

sive and transparent in relation to recyclers, nor were they able to determine direct opportunities for inclusion (question #8).

With regard to the generation of inclusive recycling information (indicator 1.3), no city attained more than half of the points available. Seven of the 12 cities do not have an official census of recyclers (question #7). Bogota, Lima, Quito, São Paulo and Montevideo are the only cities to use this tool. Recycler data collection would provide greater information on the magnitude, characteristics and conditions of this group of workers.

Recycler organisations are strongest in São Paulo, Bogota and the City of Buenos Aires, while Belize City and San Jose have a long road ahead

In relation to recycler organisation (category 2), formal organisations usually have legal and control tools. However, the main limitations for organisations lie in costly administrative processes and, in some cases, recyclers' resistance to formally organising. At the same time, a great deal of business organisations (cooperatives and microbusinesses) do not have access to financing mechanisms (question #23). In the vast majority of cities, recycler organisations have opportunities to exchange information and dialogue amongst themselves at the national level. Bogota and the City of Buenos Aires scored highest in relation to the level of participation of recycler organisations in roundtable discussions with municipal authorities and other stakeholders (question #19). It is important to note that in six cities (Asuncion, Belize City, Montevideo, Quito, San Jose and São Paulo), there are no opportunities for dialogue and coordination, due to low levels of organisation.

Bogota, Quito, São Paulo and Santa Cruz have gender equality in terms of participation and leadership within recycler organisations, but the majority of women lack tools and social protection in their jobs

Some studies on informal recycling have determined that women form a large part of the informal recycler labour force[8]. However, women recyclers face great inequality in terms of accessing recyclable materials of greater value, health risks from working with all kinds of waste, and political empowerment, given that it is difficult for women to attain roles of authority within formal recycler organisations, cooperatives and microbusinesses (WIEGO, 2015b).

The evaluations of the 12 cities in the current study capture gender inequality. In some aspects, however, the results provide an encouraging picture. For example, women were found to be highly represented in positions of leadership within organisations in Bogota, Quito, São Paulo and Santa Cruz: cities that obtained the highest score (100 points) in this question (#20). On the other hand, four cities (Belize City, Lima, San Jose and Santiago) obtained a score of 0.

Violence and sexual harassment suffered by female recyclers is a recurring theme in the cities analysed. The women have neither the infrastructure nor adequate tools to carry out their jobs. Many are forced to bring their children to the workplace because they lack social care and protection programmes such as day care, time allotted for breastfeeding and pregnancy care, among others. At the same time, women recyclers do not always have access to adequate sanitary services, leading to deteriorating health and emotional and psychological stress.

8 See for example, WIEGO (2015a).

Recyclers must be incorporated into the waste value chain to improve work conditions and income

The fundamental processes that determine recycler productivity include safe access to materials, access to storage facilities and transport, and access to marketing channels. It is fundamental then that local governments and recycler´s organisations join forces in order to improve working conditions, thus allowing recyclers to generate greater value in the chain. The cases of the City of Buenos Aires and São Paulo stand out as the cities with the greatest accessibility to infrastructure for the collection and storage of materials (indicator 3.1). The City of Buenos Aires is the only case in which innovative processes exist for the pre-processing of recyclable materials (question #27) in the form of *centros verdes* (green centres) with sorting belts and continuous baling presses. These green centres provide an infrastructure of great value for the tasks carried out by cooperatives.

In terms of the conditions for marketing recyclable materials (indicator 3.2), Asuncion, Bogota, the City of Buenos Aires, Lima, Mexico City and Quito scored highest, due mainly to the fact that the recyclable materials processing industry is found to be more developed in these cities and, as such, the sellers have access to a more competitive market.

Regarding the possibility of recyclers being hired as service providers (question #30), the solid waste management systems of the City of Buenos Aires, Montevideo and São Paulo allow for the contracting of grassroots recyclers. The cities of Buenos Aires, São Paulo and Bogota also have periodic payment processes for services supplied by grassroots recyclers (question #31). Meanwhile, recycler income in the cities of Buenos Aires, Belize City and Montevideo exceeds the national minimum wage in each country (question #33). Recycler income is 57% higher in the City of Buenos Aires, 50% higher in Belize City and 7% higher in Montevideo.

It is evident that the increase in incomes of grassroots recyclers is closely linked to their formal incorporation into the solid waste management value chain, and into the recyclable material commercialisation process, subject to market conditions.

Photograph: Tatiana Candeal

IV. Findings per category

Category 1 - Regulations

The aim of the **regulatory category** was to analyse the current state of the design, implementation and control of public policies relating to Integrated Sustainable Waste Management (ISWM), recycling, recyclers and inclusive recycling in 12 cities selected for the study. This category was analysed using four (4) indicators: (1.1) waste management regulations; (1.2) grassroots recycler integration; (1.3) the generation of information; and (1.4) public health and environment.

1) REGULATORY

		Average	45.4
●	1	São Paulo	70.3
●	2	City of Buenos Aires	65.1
●	=3	Bogota	62.5
●	=3	Lima	62.5
●	5	Santa Cruz	52.1
●	6	Montevideo	43.2
●	7	Quito	42.2
●	8	Santiago de Chile (Commune)	39.1
●	9	Mexico City	33.9
●	10	Asuncion	32.8
●	11	San Jose	26.0
●	12	Belize City	15.6

● Score 0-25 ● Score 26-50 ● Score 51-75 ● Score 76-100
Normalised score 0-100, where 100 = best
Ranking of 12 cities, '=' means a tie between two or more cities
Indicators and sub-indicators equally weighted in their level

São Paulo leads in the regulatory category followed by the City of Buenos Aires, Bogota and Lima

São Paulo obtained the highest score in the Regulatory Category, followed by the City of Buenos Aires, Bogota and Lima. Belize City scored lowest, followed by San Jose and Asuncion. The other cities achieved fewer than half the points available (less than 50%). São Paulo is solidly positioned within this category as a result of its regulations aimed at grassroots recyclers (indicator 1.1), and because grassroots recyclers are integrated into the waste management system (indicator 1.2). Law 12.305 of 2010 on The Policy for the Integrated Management of Solid Waste in Brazil integrates recyclers through actions that include shared responsibility for the lifecycle of products, and one of the policy instruments is to incentivise the creation of cooperatives or other forms of recycler associations for their development.

The São Paulo Solid Waste Management Plan was drawn up through a participatory process in which the government, civil society and re-

cyclers participated. São Paulo also allocates a budget to recyclers to pay for rent, processing equipment and vehicles. The city has created a "Fund for Reverse Logistics and Recycler Inclusion" that aims to strengthen cooperatives through economic support. The occupation of grassroots recycler now exists in the Brazilian Code of Occupations; code 5192-05 defines the duties of the "Recyclable Material Picker". Lastly, grassroots recyclers are recognised as city waste management service providers through various programmes and instruments.

A large number of the cities do not have a municipal legal framework for waste management oriented towards inclusive recycling (question #2). The City of Buenos Aires, São Paulo, Quito and Lima do have a municipal legal framework for waste management oriented towards inclusive recycling which also promotes recycler organisation. Both Asuncion and Bogota have local regulations that recognise recyclers. In some cities, despite having legal frameworks that do not include recyclers, actions and programmes are carried out for their benefit (for example, the formalisation of recovery centres in San Jose and recycling programmes in Santiago). In contrast, informal recycling is prohibited in Mexico City.

The exclusion of recyclers in municipal waste regulations and policies is due in part to the non-participatory nature of policy-making processes (question #9). In Asuncion, the City of Buenos Aires and São Paulo, both the city and the recyclers participated in the development of regulations, and the recyclers' comments and suggestions were reflected in the legal instruments. In Bogota, Lima, Quito and Santiago, recycler organisations were called upon during the creation/updating of legal instruments. However, their proposals and requests were not always incorporated. Recycler participation in policy development processes has not been considered in the remaining cities: four cities received a score of 0 for this question (Belize City, Mexico City, Santa Cruz and San Jose).

The exclusion of recyclers from waste regulations and policies is also due to changes in local government which generate variations in municipal priorities and waste management policies (question #3). The case of São Paulo stands out for having stabilised municipal policies by implementing laws and decrees that minimise the options for policy changes. In the majority of cities, established recycler inclusion programmes are affected by changes in government (for example, Mexico City), or there is a lack of continuity due mainly to changes in priorities (for example, Lima).

Important efforts are being made to incorporate recyclers in solid waste management

Some cities have gone even further to incorporate recyclers into their public policy processes by legally recognising their work or formally incorporating them into the waste management system. In Bogota, the City of Buenos Aires, Lima and São Paulo (each receiving a score of 100 points for question #5), recyclers have legal tools (decrees and laws), and the occupation of recycler is legally recognised as a supplier of waste management services. In São Paulo, the role of recycler is recognised in the Brazilian Code of Occupations. In Bogota, the City of Buenos Aires and São Paulo, recyclers are recognised as waste management service providers (question #6); in these cities recognition requires formal organisation and registration if they are to benefit from payment for services provided, as well as training and the provision of equipment. In Santiago and San Jose, the documents that legally recognise the occupation of recycler are in the process of being implemented and approved, respectively. In Asuncion, Lima, Montevideo and Quito, municipal ordinances recognise recyclers and include them in the ISWM, although these are not fully implemented. The remaining cities do not legally recognise recyclers as service providers.

In budgetary terms (question #4), the cities of Bogota, the City of Buenos Aires, Lima, Quito, São Paulo, and Santiago allocate part of their budget to inclusive recycling (provision of infrastructure, tools, machinery). Bogota and the City of Buenos Aires allocate part of their budget to paying recyclers for their services, and São Paulo allocates an annual budget to strengthening recycling organisations (infrastructure, equipment and logistics). The rest of the cities analysed (Asuncion, Belize City, Mexico City, Montevideo, San Jose and Santa Cruz), do not allocate municipal funding for inclusive

recycling, and generally rely on global ISWM budgets which do not give much detail nor total amounts. However, recyclers in these cities do receive support from the city, such as integration into sorting plants and formalisation of transport workers (Montevideo) or delivery of machinery, maintenance and infrastructure to recycler-managed sorting plants (Mexico City).

An area for improvement is the access of recycler organisations to municipal tendering processes for recycling (question #8). Half of the cities received a score of 0 in this question. The tendering processes are either scarce or overly specific, and in some cases, recyclers do not fulfil the requirements.

The lack of information on inclusive recycling is a significant challenge in the cities analysed

Scores were low for indicator 1.3 on the generation of information, with the 12 cities scoring an average of 31.3 points out of a maximum of 100. Within the framework of inclusive recycling, local governments have made no significant investments in generating information, or in creating programmes backed by communication and promotion. For example, when compiling information on Integrated Sustainable Waste Management Plans for this study, either no data was found for many of the series, or the data was not recent.

In response to the question on the generation of information on inclusive recycling (#13), no city scored over 50 points; an average of 12.5 points out of a possible 100 points was obtained. Bogota, Lima and São Paulo do generate information on recycling; however they do not have information on recyclers and/or inclusive recycling. Bogota has published data on the recycler census and the amount of waste recuperated. In São Paulo, data on Integrated Sustainable Waste Management is published on the municipal webpage (they do not include information on recycler organisations, but they do provide clarification on recycling programmes). Belize City, Quito and Santiago do not have inclusive recycling information systems; however, they do publish data on collection and recycling. Lima registers the number of recycler groups and ISWM data; however, this information is not easily accessible. Asuncion, Montevideo and Santa Cruz do not have an IWSM information system. In the City of Buenos Aires, the law provides for an IWSM information system, but this has not yet been implemented. San Jose has no data on its recycling programmes.

The majority of cities do not have an official recycler census (question #7). Only five cities (Bogota, Lima, Montevideo, Quito and São Paulo) have carried out a census of grassroots recyclers. In Asuncion and Mexico City, regulations require that a registry be kept of recyclers per jurisdiction; however, this has not been implemented. In order to have a better understanding of the situation and issues affecting the sector, the generation of information about inclusive recycling and grassroots recyclers would be instrumental for all stakeholders involved. The same information would at the same time serve as a key tool in designing better public policies and making more informed decisions.

Citizens should become more involved in solid waste management and recycling

One of the challenges highlighted by the results of this study is the lack of knowledge among citizens on the issues affecting recyclers and the social, economic and environmental benefits that they generate. In terms of communication with citizens (question #14), only Santa Cruz has permanent campaigns for encouraging and promoting inclusive recycling within the city. The vast majority of cities have sporadic communication campaigns. Bogota, Lima and São Paulo have campaigns to encourage recycler recognition. In Quito, they promote the separation of waste and its collection by recyclers participating in municipal projects. In Quito, they also have a mobile application that gives information on the kinds of materials that are usually recycled, as well as how to contact grassroots recyclers within the city. This citizen's tool was developed by the ReciVeci organisation and is active in only two neighbourhoods in Quito. Campaigns in Santiago take place at the neighbourhood level and are associated with municipal projects. In Asuncion, Mexico City, Montevideo and São Paulo, campaigns have focused on citizens and have not always

considered the recyclers. Belize City does not have municipal level communication campaigns to promote inclusive recycling.

At the same time, citizens have few incentives to recycle, such as encouraging separation at source, providing rebates on public service rates and establishing deposit and reimbursement programmes. An average score of 21 points was attained for question #12 that corresponds to this topic, one of the lowest scores in the study. Belize City, Bogota, Lima, Mexico City and Santiago all have recycling incentives for users. According to regulations in Belize City, producers, importers and distributors of beverages are responsible for recovering their containers, creating an opportunity for recyclers. In Bogota, incentives are included in the current tariff framework, such as a 4% discount in the waste recovery rate for those users of public sanitation services whose selective collection route has rejection rates under 20%. In Lima, a discount voucher is available for those who deliver recyclable materials weekly. Both Lima and Mexico City have barter incentives. The objective of the exchange in Mexico City is to encourage the separation of recyclable materials at source by exchanging recyclable waste, paper, cardboard, PET, glass, Tetra Pak, aluminium and electronic waste for agricultural products cultivated in the Federal District. The recycling programme in Santiago offers equipment for separation at source and a selective recyclable materials collection system

Category 2 – Organisation

The **organisational category** analyses the current situation of formal grassroots recycler organisations in terms of organisation (associative practices and/or cooperatives), political influence, internal and external representation, and strengthening productive capacity. The category has been divided into 2 indicators: (2.1) associative practices (political organisations such as unions) and (2.2) business organisations (cooperatives and microbusinesses).

The City of Buenos Aires, Bogota and São Paulo lead in the organisational category: Belize City and San Jose are the weakest cities in this area

The City of Buenos Aires, Bogota and São Paulo, in that order, are the cities that stand out the most in this category. No significant associative practices were observed on the part of grassroots recyclers in Belize City and San Jose. It is important to note that this is the category that scored lowest in the study, with a regional average of 42.2.

In several of the cities analysed there are recycler organisations that group together and represent associations; some of these are legally constituted (law) while others work in associative form but without legal recognition (question #16). In Quito and Montevideo, associations have legal status and are of a political nature, and as such defend the rights of their members. Associations are not legally recognised in the City of Buenos Aires and Santa Cruz, and there are no organisations of a political nature (in other words, trade unions) in São Paulo, Belize City and Santa Cruz. The situation in Mexico City is unique in that recyclers are employees or volunteers of the sanitation company and belong to a trade union which also represents other groups of workers.

The majority of recycler associations possess tools for decision making and control (statutes, accountability, member registration), and must report information to a national authority (question #17). However, with no legal standing, they cannot manage resources and accounting records alone (Asuncion, Lima and the City of Buenos Aires). Meanwhile, the main limitations in creating and maintaining formal recycler organisations lie in the costs and necessary administrative processes, as well as recycler resistance to unionising.

Recycler associations rely on spaces for dialogue and for exchanging experiences at the local and national level (question #18). There are also spaces for dialogue at the international level, coordinated mainly by the Latin American and Caribbean Network of Recyclers (Red LACRE). Recyclers have participated at negotiating roundtables with local and national authorities to influence public policy (in Bogota, the City of Buenos Aires, Montevideo, Quito, San Jose, São Paulo, Santa Cruz and Santiago for example). However, it is evident that low lev-

2) ORGANISATION

		Average	42.2
●	1	City of Buenos Aires	79.4
●	2	Bogota	70.0
●	3	São Paulo	68.9
●	4	Mexico City	51.7
●	=5	Lima	46.7
●	=5	Quito	46.7
●	=5	Santa Cruz	46.7
●	8	Santiago de Chile	34.4
●	9	Montevideo	33.3
●	10	Asuncion	28.3
●	=11	Belize City	0
●	=11	San Jose	0

● Score 0-25 ● Score 26-50 ● Score 51-75 ● Score 76-100
Normalised score 0-100, where 100 = best
Ranking of 12 cities, '=' means a tie between two or more cities
Indicators and sub-indicators equally weighted in their level

els of organisation limit the promotion and strengthening of dialogue with other sectors, as is seen in six of the 12 cities (Asuncion, Belize City, Montevideo, Quito, San Jose y São Paulo), where there are no opportunities for dialogue and coordination between the different stakeholders along the recycling value chain (question #19).

Representation of women in associations is high in Bogota, Quito, São Paulo and Santa Cruz

The cities of Bogota, Quito, São Paulo and Santa Cruz stand out because the majority of recycler associations are comprised of and represented by women (question #20). In Asuncion, the City of Buenos Aires and Mexico City, 50% of recyclers identified as female. In both cases, they occupied leadership positions in their associations. Female participation is negligible in Montevideo, although women do occupy management positions. Worth noting is that women make up 40% of sorting plant workers. In the rest of the cities, information on the representation of women is scarce. It is important to note that none of the cities analysed have training programmes aimed at women (in terms of empowerment and gender violence, for example).

Lack of funding is one of the obstacles for the growth of commercial organisations of recyclers

A higher level of recycler organisation is achieved when they form part of the city's business and production system. In relation to the activity of recycler organisations (such as cooperatives and microbusinesses) in the value chain (question #21 and #22), the case of Bogota stands out: more than 170 organisations of recyclers are economically active and marketing materials within the industry. In the City of Buenos Aires, cooperatives offer collection services under contract from the municipality, and they sell the material to the best buyer in the market. In Quito, some recycler organisations work with the city through coordinated actions for collection, storage, commercialisation and administration. In this case, the city lends support by way of human resources (administrators), equipment (trucks) and infrastructure (storage facilities); however, the income from the sale of materials goes to the recycler associations. In Mexico City, material is sold by recyclers via trade unions, while in Asuncion the private sector has partnered with recycler organisations. No recycler business associations have been identified in Belize City and San Jose.

One of the main obstacles to the growth of cooperatives and microbusinesses is the lack of funding (question #23); in nine out of 12 cities analysed, recycler business organisations do not have access to funding mechanisms. The resources obtained until now have been channelled via NGOs (Asuncion, Bogota, Lima, Montevideo, Quito, and Santa Cruz). The cases of the City of Buenos Aires, São Paulo and Santiago stand out, since organisations do have access to funding mechanisms such as microcredits. However, the administrative requirements are complex for the organisations, making access to funding difficult. In some cases, the industry prefers to give the recycler associations machinery rather than funding, responding to their own needs in the process.

Category 3 – Market

The **market category** assessed the scope for improvement in the areas of business and production for recycler organisations. This category has been divided into four indicators: (3.1) waste access and storage conditions; (3.2) conditions for marketing recyclable materials; (3.3) grassroots recycler income; and (3.4) working conditions.

The City of Buenos Aires leads the market category due to good access to materials and storage facilities and an advanced processing industry

The analysis places the City of Buenos Aires as the leader in the market category (92 points), due to its conditions for accessing and storing recyclable materials, solid commercialisation environment and advanced processing industry. The City of Buenos Aires scores close to 100 in each sub-indicator; child labour is its only weak area in this category (question #34). The City of Buenos Aires is followed by São Paulo and Bogota, with San Jose in the last position.

3) MARKET

		Average	49.9
●	1	City of Buenos Aires	92.0
●	2	São Paulo	72.1
●	3	Bogota	62.9
●	4	Santiago de Chile (Commune)	55.4
●	5	Lima	52.1
●	6	Mexico City	50.5
●	7	Santa Cruz	47.8
●	8	Montevideo	41.2
●	9	Belize City	36.6
●	10	Quito	34.9
●	11	Asuncion	27.4
●	12	San Jose	26.0

● Score 0-25 ● Score 26-50 ● Score 51-75 ● Score 76-100
Normalised score 0-100, where 100 = best
Ranking of 12 cities, '=' means a tie between two or more cities
Indicators and sub-indicators equally weighted in their level

Safe access to recyclable material and appropriate storage conditions are fundamental to the work of recyclers (indicator 3.1). Legal mechanisms are in place to enable the cities of Buenos Aires and São Paulo to recruit directly for the provision of collection of source-separated waste services, leading to better conditions for safe access to materials (question #24). In exchange for money, cleaning or educational campaigns, large generators in Bogota, San Jose, São Paulo, Montevideo and Quito agree to deliver materials to recyclers or commercialise them. In Quito, São Paulo and Santiago, recyclers form part of source-separated waste collection and collection points where citizens can drop off waste voluntarily. It is evident that some measures have been taken to allow recyclers to access recyclable materials; however some of these cities do not have the legal tools to provide for the possibility of contracting recycler organisations for collection services (as demonstrated in question #30 on direct contracting which does not occur in Asuncion, Belize City, Quito, San Jose, Santa Cruz and Santiago). In Mexico City, as the recovery and sale of recyclable materials is carried out by workers of the sanitation company, neighbourhood residents deliver waste directly and the quantity of material recovered depends on the capacity of the transport. As a result, the material received by recyclers is scarce and of poor quality (as is the case in Santa Cruz).

There are formal municipal systems for collection of source-separated waste with recyclers in the City of Buenos Aires, São Paulo y Santiago, (question #25). In the City of Buenos Aires, cooperatives are contracted to provide this service as well as that of collection in large generators. Under legislation in São Paulo, the municipality is obliged to implement source-separated waste collection with recyclers, and as such the city contracts cooperatives to provide this service while the collection of non-reusable

waste is carried out by a private company. In Bogota, recycler organisations provide the collection service for source-separated waste in the city and they also have contracts with large generators. Santiago provides a source-separated waste collection service in public institutions, businesses, universities, business districts, shops, fairs and events. In Lima, recyclers have not yet been included in the source-separated waste collection system, but the municipality is developing mechanisms to do so. In Quito, there are municipal projects that include recyclers in door-to-door source-separated waste collection. In Santa Cruz, recyclers are included by way of a contract in which they become employees of the company in charge of providing the service to the city.

In terms of access to facilities for the storage and sorting of materials (question #26), the situation is varied: In Mexico City and Montevideo, recyclers working in transfer stations and sorting plants have a place for storing and sorting material. The level of technical development achieved by groups of recyclers in the sorting (pre-processing) of recyclable materials also presents a mixed picture (question #27). The best level of technical development in the sorting of recyclables by recyclers was observed in the City of Buenos Aires, where the processing centre is managed by more experienced recyclers, and objects are made of recycled materials (cardboard toys, drinking glasses from glass bottles etc). The City of Buenos Aires also has "green centres" where recyclers and cooperatives can select recyclable materials in a roofed area with good hygiene and security.

In Asuncion, Belize City, Lima, Mexico City, Montevideo, Quito, San Jose, Santa Cruz and Santiago, the majority of processes are carried out manually, without trucks, balers or mincers, leading to intermediaries adding value to the material.

The cities with more developed processing industries possess better conditions for commercialisation

In terms of conditions of recycler organisations for marketing recyclable materials (indicator 3.2), the cities of Asuncion, the City of Buenos Aires, Bogota, Lima, Mexico City and Quito scored highest, mainly due to the fact that the recycling material processing industry is better developed in these cities (question #29). In each country, depending on public policies and national and international markets, some materials are more valued by recyclers than others (question #28). In cities with producer responsibility laws, such as Belize City and Quito, PET and glass containers have a higher and more stable value than other materials.

The sale price of the materials also depends on factors such as the level of value added in terms of logistics, storage and processing/production, as well as on the quantity to be sold. In Montevideo, the price of PET is higher, but paper is more easily recovered in large quantities, making this a more valuable material for recyclers. The greatest disparity between recycler sale prices and those of intermediaries is observed in San Jose and São Paulo. The processing industries are more developed in Asuncion, Bogota, the City of Buenos Aires, Lima, Mexico City, Montevideo and São Paulo, where each country has processing plants for all of the materials recovered. There was a boom in the processing industry in Santiago and Quito as a result of an increase in the recovery of recyclable materials, but some recyclable materials (such as plastic and glass) are still imported for the operation of certain industrial plants.

Direct contracting and fixed payments for services are some of the ways in which recyclers may improve their income

The study also evaluated recycler income, estimating the average income in relation to the national minimum wage (question #33). The City of Buenos Aires leads in this area with recycler income varying between 103% and 157% of the national minimum wage, followed by Belize City and Montevideo. In Asuncion, Lima, Quito and San Jose, recycler income represents less than 50% of the minimum wage of each country. The recyclers with the lowest income are those in San Jose, where income represents 14% of the minimum salary. It is important to note that the monthly income for recyclers varies greatly (in terms of commercial value and quantity of waste), making the monthly average difficult to quantify.

It can be broadly observed that the highest incomes are found in cities where the contracting of recycler organisations is permitted in waste management and a fixed payment is paid for their services. The City of Buenos Aires stands out with respect to recycler groups contracting to municipal waste management systems (question #30), followed by Montevideo and São Paulo. Six cities obtained a score of 0 points for this question. The City of Buenos Aires, Mexico City, Montevideo and São Paulo allow (and in some cases favour) the contracting of recyclers by the ISWM system. In Montevideo, recyclers participate in the collection of source-separated waste, especially in areas of large producers. In Bogota and Lima, regulations do not prohibit grassroots recyclers to take part in tenders for sanitation services; however, they must comply with all terms of the decrees and calls for tenders made by local authorities.

The cities of Bogota, the City of Buenos Aires and São Paulo have fixed payment mechanisms for recycler service providers (question #31). In São Paulo, recyclers receive payment for services in environmental education and for the administration of drop off points; likewise, in São Paulo and Montevideo, recyclers who work in separating plants receive extra remuneration against the value they receive for the sale of the material. In Belize City, the majority of those who carry out recycling activities are municipal employees who receive monthly remuneration for their work in the common waste collection system. In the cities of Asuncion, Lima, Mexico City, Quito, San Jose, Santa Cruz and Santiago, there is no system of fixed periodical payment for the services provided by grassroots recyclers. The remuneration they receive is linked to the sale of materials and not to the service they provide.

Recyclers generally receive support from local authorities in the form of tools, equipment and infrastructure. Only the City of Buenos Aires and São Paulo have programmes for the diversification of services provided by recyclers (question #32); for example, a group of women in the City of Buenos Aires (Environmental Promoters) are dedicated to raising awareness and training citizens within zones where source-separated waste collection is provided. No other cities have diversification programmes.

Working conditions for recyclers are still very weak

The working conditions indicator (3.4) produced discouraging results, with an average score of 41 points (out of 100) for the sample. The best working conditions for recyclers were found in the City of Buenos Aires and Santiago, and the worst in Asuncion, Quito, Mexico City and Montevideo. There are no official figures on child labour in the solid waste management chain (question #34). However, the presence of children is evident in the streets of some cities. The City of Buenos Aires is implementing a child labour eradication programme that plans to enrol child recyclers in day care.

The 12 evaluations yielded a poor result in terms of the gender focus in working conditions for female recyclers (question #35), with an average score of 8 points, the lowest score for any question. The City of Buenos Aires came out fairly well positioned (with day care for the children of recyclers and measures to protect pregnant or breastfeeding women), followed by Santa Cruz. None of the other cities have training programmes for women that address gender violence or sexual harassment, nor do they have programmes for the protection of pregnant or breastfeeding women, or to promote day care.

The City of Buenos Aires leads with respect to recyclers' access to adequate working tools (question #37). The quality of recyclers' work tools also varies significantly between those recyclers who participate in municipal projects and those who work on the streets. There are isolated cases (Bogota and Asuncion) that rely on support programmes to change the mode of waste collection transport, from animal-drawn to motorised vehicles. In Bogota and Belize City, basic tools (shirts and bags) are given to recyclers who work in the streets and those who work in transfer stations (gloves, boots, personal protective equipment).

V.
City profiles

The following 12 city profiles contain a summary of the most important findings from the assessments. Each profile includes the definition of the city (the unit of analysis used), a chart containing demographic and socio-economic information for the city, and a description of inclusive recycling in the city, divided into three sections: a) a brief description of the ISWM system in the city; b) a brief description of the city's grassroots recyclers; and c) the most important challenges that the city faces in terms of inclusive recycling. The sources used can be found in the Bibliography section of this report.

Photograph: Tatiana Candeal

Asuncion, Paraguay

City definition (unit of analysis):
Asuncion sits on the left bank of the Paraguay River almost at the confluence of this river with the Pilcomayo River. The city, which is made up of six districts and 68 neighbourhoods, is bordered on the northeast side by the city of Mariana Roque Alonso, on the east side by the cities of Luque and Fernando de la Mora, and on the south side by the cities of Lambaré and Villa Elisa. Asuncion is an autonomous municipality, not part of any department.

SOURCES:
Municipality of Asuncion. 2016. Regulatory Plan, Department of Urban Development [http://sig.mca.gov.py/]
United Nations Environment Program, Secretariat of the Environment and the Municipality of Asuncion (Paraguay). 2008. "Urban Environment Perspectives. GEO Asuncion". United Nations Environment Program.

Indicators	Asuncion, Paraguay
Population, city[1]	2,410,991
GDP (PPP) per capita, city[1]	US$14,902
Percentage of the population below the poverty line, city[1]	43.6%
Minimum monthly wage (US$), national[2]	US$283
Gini, city[3]	0.50
Unemployment rate (%), national[4]	5.3%
Informal employment (%), national[4]	64.4%4
Percentage of urban housing in deprived neighbourhoods (%), national[3]	17.6%

1 Canback, metropolitan area
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO

Brief description of the city's ISWM system

The solid waste management system remains a complex task characterised by the problem of population growth, increased waste generation and institutional weakness aggravated by limitations to extend service coverage and difficulties surrounding waste disposal. Legislation (which has been promulgated, but not yet regulated for implementation) exists in Paraguay for the regulation of solid waste management at the national and municipal level.

Currently the Municipality of Asuncion has overall responsibility for the collection, transportation and final disposal of urban solid waste. The city has a staff of approximately 400 people in charge of collecting and transporting urban waste. Although their waste recovery coverage rate includes approximately 80% of the population, they are faced with significant logistical problems that require more personnel, and most of the waste recovery fleet has outlived its usefulness and is constantly out of service due to repairs and maintenance. Homes not serviced by a municipal waste collection service burn their waste or dispose of it in riverbeds, ditches, wastelands or in the street, thus exacerbating the environmental situation. There is no sanitary landfill in Asuncion, so disposal of solid waste is inadequate. The privately managed municipal dump at Cateura does not fulfil the minimum specifications of a sanitary landfill. There are no programmes for the separation of waste at source or for selective waste recovery within the city.

With regard to inclusive recycling, although Municipal Ordinance 408/14 recognises the importance of recycling and the work carried out by recyclers, there has been little advancement in its implementation. Institutional weakness, the scarcity of available resources, a lack of technical personnel with sufficient expertise, the fragmentation of responsibilities, the recent floods in Asuncion and the change in municipal government during the last year have further delayed the implementation of the ISWM system.

The work carried out by those who make a living from waste continues to substitute municipal responsibility and a multi-sectoral strategy is required to attends to the needs of this sector, which is characterised by extreme vulnerability.

Although the topic of recycling continues to be ignored by authorities, the significant economic opportunities it presents have not gone unnoticed by the private sector.

Brief description of grassroots recyclers

There are approximately 3,000 informal recyclers collecting recyclable material on the streets of Asuncion. Moreover, another 600 to 1,000 work at the Cateura dumpsite. Recyclers are characterised by extreme levels of vulnerability, social exclusion, lack of access to basic services and the need to ensure an income that covers their most basic needs. These recyclers have recognised the opportunities that are generated by formally organising and forming associations, which has resulted in the establishment of various associations that group recyclers, mainly according to geographic location.

However, the development of this important process was limited by the devastating floods that struck Asuncion between 2014 and 2016. The majority of recyclers were evacuated and displaced from their homes. Upon being relocated to municipal shelters, the members of these organisations not only lost their homes and livelihoods, but they were also distanced from their contact networks, severely limiting their ability to periodically meet up. Due to the urgency of the natural disaster that devastated these communities, the majority of NGOs that had previously been supporting the work of recyclers were forced to redirect their actions, concentrating their efforts on the processes of evacuation and relocation, as well as the provision of temporary housing and basic needs. As a result, support processes were interrupted for many of these NGOs, thus affecting their operations and continuity.

The effects of the floods have not only been devastating to the work of recyclers, but also to the whole process of strengthening recycler organisations that has been carried out over the years. The vulnerability of these organisations has been highlighted once again, as has the importance of long term sustained support that will enable Paraguay to have recycler organisations as strong as those of Brazil and Colombia in the future.

Inclusive recycling challenges

Although Asuncion faces considerable challenges, there are also various opportunities to be exploited with the aim of putting recycling back at the top of the agenda; such as the implementation of household waste separation policies. This would not only help to expand the recycling market, which in itself would create positive social externalities, but it would also help to improve the environment.

The current tax rates applied to the collection, transportation and final disposal of solid waste must be revised by the municipality to ensure that these cover the real cost of the service. Doing so will help to generate the resources necessary to create a team dedicated exclusively to the ISWM system -one with not only sufficient technical expertise, but also the necessary infrastructure and machinery to carry out their tasks.

It is also necessary to develop multi-sectoral strategies that fulfil the needs of recyclers while supporting and developing processes that strengthen recycler organisations. As such, the municipality should research the best mechanisms for promoting the inclusion of recyclers in the solid waste management model.

Finally, the city needs to carry out a better task in terms of collecting and systematising data relating to the ISWM system, since no official data is currently available beyond that which has been generated by studies and/or investigations carried out independently or using international cooperation resources. Access to reliable data will not only help to understand what is happening at the municipal level, but also to ensure better diagnosis of the ISWM system in general and of inclusive recycling in particular.

Belize City, Belize

City definition (unit of analysis):
Belize City is the largest city in the Central American nation of Belize. It is located on the Caribbean coast at the mouth of the Belize River. It extends beyond Mile 14 on the George Price Highway to the West and Mile 8 on the Philip Goldston Highway to the North at the Haulover bridge. The city itself is divided into two areas: Northside, bounded by Haulover Creek and ending in the eastern area of Fort George, and Southside, which extends to the city suburbs and the port area, while also including the centre. Belize City is the capital of the District of Belize, and is under the administration of the Belize City Council (municipal authority with direct election).

SOURCES:
Belize City Council Act-Chapter 85 http://www.belizelaw.org/web/lawadmin/index2.html
Belize City Council, About Belize City http://www.belizecitycouncil.org/about-belize-city

Indicators	Belize City, Belize
Population, city[5]	70,800
GBP (PPP) per capita, national[1]	US$7,053
Percentage of the population below the poverty line, city[1]	40.6%
Minimum monthly wage (US$), national[2]	US$322
Gini, city[3]	N/A
Unemployment rate (%), national[4]	12.0%
Informal employment(%), national[4]	N/A
Percentage of urban housing in deprived neighbourhoods (%), national[3]	10.8%

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO
5 Belize City Council

Brief description of the city's ISWM system

Belize City Council (a municipal authority) is in charge of sanitation and solid waste collection within the city. In accordance with Chapter 85 (Part VIII, 30-b) of the Belize City Council Act, the city has the obligation "to coordinate, control, manage or regulate the timely and efficient collection and removal of all waste from all residential or commercial areas in Belize City". It is the duty therefore of the municipal authority to collect urban waste, to clean the city's streets and public areas, and to transport the resulting waste to the Transfer Station located at Mile 3 of the George Price Highway. Waste received by the transfer station is either destined for the sanitary landfill located at mile 24 on the George Price Highway, or it is selected and destined for reutilisation (between 1% and 2% of waste received) and recycling value chains. The management and running of the Transfer Station and its operations, as well as final disposal of waste, are managed by PASA Belize Ltd., a company contracted by the Belize Solid Waste Management Authority (BSWaMA), a national Government body established through the enactment of the Solid Waste Management Act, Chapter 224). The BSWaMA, as a public institution under the Ministry of Natural Resources, is responsible for coordinating and improving solid waste management in the country and for those areas along the waste management chain that cannot be operated efficiently at the municipal level.

However, solid waste management at both the municipal and national level is characterised by alliances and contracts between public and private stakeholders. Belize City Council awards the tender to Belize Waste Control Ltd. (BCW) for the collection of urban solid waste (commercial and domestic, when the bags are left in front of the corresponding doors, or in dedicated containers and spaces), as well as its transportation to the Transfer Station. The collection service is organised into two areas and is carried out twice a week (Northside: Monday and Thursday; Southside: Tuesday and Friday), with voluminous waste collected on Wednesdays. BWC uses a fleet of 12 rear load trucks and two roll-off trucks in the provision of this service.

BWC receives an income of around US$50,000 per week for their services; their contract with Belize City Council has been in place for more than 20 years. It is worth noting that the contractual relationship between Belize City Council and BWC prevents the municipality from actively promoting any recycling initiatives. It is the responsibility of civil society and the private sector, therefore, to promote recycling in the country. Street sweeping, the removal of accumulated waste, and the collection of domestic and commercial waste abandoned on the streets (which is plentiful owing to the scarce frequency of collection and the absence of fixed hours on the indicated days), are services that are directly managed by Belize City Council, their 122 employees, and the vehicles and machines involved in this activity. It is only recently that these services have been managed in-house; until January 2015, these activities were carried out by Belize Maintenance Ltd. (BML), a company in receipt of close to US$78,000 per week. According to Belize City Council, a return to in-house management has resulted in an increase in worker's salaries (from 3.5 Belize Dollars per hour to 5 Belize Dollars per hour), while worker's payments are now more punctual and global costs have decreased significantly (the service now has a monthly cost of between 45,000 and 50,000 Belize Dollars, a reduction of 35% compared to 2014 figures).

The operation of the Transfer Stations and the Final Disposal Site were tendered by BSWaMA and awarded to PASA Belize Ltd. (Belizean branch of the Mexican company PASA). The Transfer Station and the Final Disposal Site were implemented between 2008 and 2014 within the framework of the Solid Waste Management Project which encompassed the closure of an open-air dumpsite at mile 3 on the George Price Highway, the closure of two open-air dumpsites and the development and activation of two Transfer Stations along the Western Corridor (highway that joins Belize City with the country's capital Belmopan and the border with Guatemala). The project also oversaw the closure of two open-air dumpsites and the development and activation of two Transfer stations on the tourist islands of San Pedro and Caye Caulker, and the development and activation of the sanitary landfill found at Mile 24 on the George Price Highway (where the waste from Belize City and other localities is received). The daily collection and transportation of solid urban waste is estimated at 51.5 tons per day, of which between 1% and 2% is selected by grassroots recyclers in the Transfer Station, destined for the recycling and reutilisation value chains. The amount of recyclable and reusable materials recovered by grassroots recyclers before formal collection is unknown.

The main motor in the recycling value chain is Belize City where the commercialisation of tins and bottles is guaranteed due to the fixed prices required by the Returnable Containers Act (No 12 of 30-12-2009), and the fact that main producers of these types of containers are legally obliged to purchase them.

Brief description of grassroots recyclers

In Belize City, recyclers are divided into three main segments: i) recyclers dedicated to collecting glass bottles, PET and tins, and who have not been included in the formal collection system. It is not known how many recyclers make up this segment. ii) Recyclers who have been integrated into the formal sector as cleaners, sweeper/chippers, or less commonly, as truckers, who optimise their income by collecting and selling glass bottles, PET and tins. This group is made up of almost 70 recyclers employed by the government to service the municipal department of sanitation. iii) Recyclers working in the Transfer Station who are dedicated to selecting and selling a higher number of recoverable fractions. Before the Solid Waste Management Project, this group of approximately 25 to 30 operators worked at the open-air dumpsite at Mile 3 on the George Price Highway.

There is also an informal sector of micro-middlemen. They purchase materials from some of the informal recyclers and sell them to buyers in the formal sector; equipped with a mode of transportation, their main economic-operational function is to provide the first leg of transportation in those places where recyclers are too far away from areas of commercialisation. These micro-middlemen acquire some of the sorted items at the Transfer Station as well as the items

collected by informal recyclers in the neighbourhoods of Belize City.

In Belize City there are no formal or informal recycler organisations. It is worth highlighting that the recyclers integrated into the formal collection system are sometimes unionised (as are the rest of the public workers employed by Belize City Council). However, those directly involved declare that aspects relating to informal collection are not included in the dialogue agenda between unions and municipal authorities; there is no one single union, workers are represented by a number of organisations (the Christian Workers Union is among the strongest). In the case of the Transfer Station, despite being concentrated in the same place of work and having warehouses, equipment and other spaces at their disposal, the recyclers are characterised by low levels of organisation. Even so, some "natural leadership" is evident (as is seen in those workers with a skill for stating the aspirations of their colleagues and who occasionally take on the role of spokesperson).

Inclusive recycling challenges

The main challenge to inclusive recycling in Belize City is carrying out a census of the population of informal recyclers, paying special attention to the recyclers who work on the streets and to the group of recyclers who carry out informal activities in a way that is integrated with the municipal cleaning and sweeping services. A suggested next step would be the recognition of the activity of recovering and selling recycled materials, and its participation in the formal scheme of waste management. For recyclers who receive a fixed salary for their cleaning and sweeping services, the main challenge is maintaining the vested status and stability afforded by their employment contract with the municipality. At the same time, they must seek formulas for the recognition and protection of their waste recovery activities and to enable their efficient incorporation into any future plans to modernise the ISWM system.

With regard to informal recyclers working in the Transfer Station serving the city, the challenge is to build on the progress made in improving the working conditions of recyclers and extend it to other recycler groups in the city. Additionally, the ongoing process of formalising the recyclers based at the Transfer Station must be finalised by way of establishing cooperatives or other legally constituted forms of association. This group of recyclers has already received training on how to become stronger at the organisational level. It is also necessary to map, recognise and continue to foster their classification skills so that in the medium to long term when faced with eventual restructuring to the ISWM system, rather than being expelled from the system, they are included in the recycling and reutilisation value chain in a dignified and satisfactory way. If the volume of recovered waste is to be increased (benefitting grassroots recyclers, the municipality and the environment), then the challenge is to extend the requirements of the Returnable Containers Act to more recyclable materials. Obligations would have to be integrated into binding mechanisms that favour the coordination between producers, distributors and importers so that they might establish economies of scale, storage systems and financial protection systems together. Thanks to this integration, these companies would be able to economically and financially sustain their obligation to buy returnable containers and goods; without this kind of mechanism, companies are incentivised to avoid the law or tend to turn to lobbying in order to reduce the level of responsibility.

Bogota, Colombia

City definition (unit of analysis):

Bogota is the capital of Colombia, and is located in the centre of the country on the eastern range of the Andes. It is made up of 20 localities: Usaquén, Chapinero, Santa Fe, San Cristóbal, Usme, Tunjuelito, Bosa, Kennedy, Fontibón, Engativá, Suba, Barrios Unidos, Teusaquillo, Los Mártires, Antonio Nariño, Puente Aranda, La Candelaria, Rafael Uribe, Ciudad Bolívar and Sumapaz.

SOURCES:
The Mayor's Office of Bogota. 7 October 2015. City location: http://www.bogota.gov.co/ciudad/ubicación
DANE:
National Administrative Department of Statistics (DANE). Demography and Population – Population Projections
https://www.dane.gov.co/index.php/estadisticas-por-tema/demografia-y-poblacion/proyecciones-de-poblacion

Indicators	Bogota, Colombia
Population, city[1]	7,964,738
GDP (PPP) per capita, city[1]	US$18,899
Percentage of the population below the poverty line, city[1]	40.6%
Minimum monthly wage (US$), national[2]	US$191
Gini, city[3]	0.50
Unemployment rate (%), national[4]	5.3%
Informal employment(%), national[4]	69.6%4
Percentage of urban housing in deprived neighbourhoods (%), national[3]	13.1%

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO

Brief description of the city's ISWM system

The collection of solid waste in Colombia is considered a public service for households and is regulated by Law 142 of 1994. Within the framework of this law, Decree 2981 of 2013 established that recycling (recovery, transportation, sorting and classification of recyclable materials) as part of the public sanitation service and as a competitive activity; that is, whenever a company meets certain requirements, they can establish contracts directly with users (homes) to collect waste and issue an invoice, generally linked to water and sewage service, to make payment.

Before 2012, the recovery of solid waste in Bogota was managed by private companies. However, recyclers argued their case in the Constitutional Court, and as a result, Sentence T-624 ruled that recyclers must be formally included in the city's public sanitation services. Moreover, Colombia's sanitation regulator, the Potable Water and Basic Sanitation Regulation Commission (*Comisión de Regulación de Agua Potable y Saneamiento Básico, CRA*) would determine the tariffs to be paid to recyclers for their service. As a result, the City issued District Decree 564 of 2012, which outlines a waste recovery scheme that is inclusive of recyclers. The Decree states that citizens should dispose of recyclable waste in a white bag, and non-recyclable waste in a black bag. The recyclers then collect the waste in the white bag before the vehicle arrives to collect the waste in the black bag. As a result of this scheme, non-recyclable waste is collected by three companies (one state-owned and two privately held), while recyclable waste is collected by organised recyclers (associations). Subsequently, in 2015, the CRA issued Resolution 720 by which each recycler is paid the amount corresponding to the Cost of Recovery and Transportation and the Cost of Final Disposal, which is calculated on the basis of a tariff methodology defined by the CRA.

In practice, however, Bogota has been slow to adopt a culture of separating waste at source and bags containing mixed waste must be ripped open by the recyclers in order to extract the materials of economic value. This is especially common among those citizens living as an individual family unit, whereas citizens gath-

ered in multifamily groups prefer to separate their waste and give it to recyclers, thus avoiding heavy bags of recyclable materials (and paying the tariff established by the CRA). It is worth mentioning that this scheme will change over the next few months due to regulations that came into place in 2016 normalising recycler pay, and encouraging recyclers to organise and establish as companies that fulfil the requirements of suppliers of a non-recyclable waste collection service.

Brief description of grassroots recyclers

In 2012, the Special *Administrative Unit of Public Services (la Unidad Administrativa Especial de Servicios Públicos, UAESP*) in Bogota, together with the District University of Bogota, carried out a census of recyclers. Out of the 21,220 recyclers that were registered, 5,797 were affiliated with a recycler association. In order to register the activity of the recycler population in a dynamic way, the UAESP created the Sole Registry of Recyclers by Trade (*Registro Único de Reciclador de Oficio, RURO*), which reported a total of 21,950 recyclers in Bogota in 2016. Thirty percent of recyclers are female, although the proportion of women in associations is almost 50%. It is estimated that around 3% are under 18 years old and 88% are between 18 and 65 years of age. It is also estimated that 69% of recyclers are heads of household. With regards to their social situation, 62% avail themselves of the subsidised healthcare system while 26% have no healthcare coverage whatsoever. Seventy-five percent have a home or a shelter to sleep in, while 21% sleep on the streets or in improvised huts, which may include their own carts. Seventy-four percent finished high school, 9% did not receive any formal education and the rest have technical diplomas or university degrees; 87% are wholly dedicated to this job, 55% work during the day; 86% use a human-powered vehicle (cart) for collection; 57% work eight or fewer hours; and 37% work between nine and 12 hours per day. Seventy-five percent provide value added to the material they collect for the purpose of receiving greater remuneration.

Inclusive recycling challenges

Recycler organisations have made themselves visible to national organisations, and as a result of their efforts in Colombia, they are recognised as providers of public sanitation services; as such, they are entitled to compensation similar to that obtained by providers of non-recyclable waste. Decree 596 of 2016 and its corresponding Regulations in Resolution 276 of 2016 issued by the Ministry of Housing, City and Territory, has established a scheme that encourages recyclers to unionise by organising and achieving certain goals within a period of five years, with the aim of becoming public sanitation service suppliers and accessing the remuneration set out in the tariff. However, recycler vulnerability is still evident, especially in working conditions where personal protection equipment is lacking and the vehicles used can cause health problems in the long term. Moreover, the way in which the different stakeholders organise should be comprehensively revised, especially those who generate waste, in order to guarantee that recyclers have access to sorted recyclable material and adequate working tools.

City of Buenos Aires, Argentina

City definition (unit of analysis):

The Autonomous City of Buenos Aires is the seat of the federal Government of Argentina and has been self-governed since 1996. It is divided politically and administratively into 15 *comunas* (48 neighbourhoods).

The city spans an area of just over 200km^2 and as the centre of the Buenos Aires Metropolitan Area, receives a daily influx of people from the municipalities of the province of Buenos Aires.

SOURCES:
Government of the City of Buenos Aires. Information on the Government of the City of Buenos Aires http://www.buenosaires.gob.ar/gobiernodelaciudad
The Constitution of Argentina. 3rd January 1995 http://servicios.infoleg.gob.ar/infolegInternet/anexos/0-4999/804/norma.htm

Indicators	City of Buenos Aires, Argentina
Population, city[1]	3,081,143
GDP (PPP) per capita, city[1]	US$35,339
Percentage of the population below the poverty line, city[1]	14.0%
Minimum monthly wage (US$), national[1]	US$437
Gini, city[2]	0.51
Unemployment rate (%), national[3]	6.9%
Informal employment(%), national[4]	46.0%
Percentage of urban housing in deprived neighbourhoods (%), national[3]	16.7%

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO

Brief description of the city's ISWM system

There is no clear data on the generation of waste in the City of Buenos Aries, but in 2015, 1,524,509 tons wet solid waste were collected and according to data provided by cooperatives, approximately 100,000 tons of dry waste (recyclables) are collected per year (50kg/day x 5,500 associated grassroots recyclers), an estimated daily average generation of almost 4,500 tons. This estimate does not include materials collected by informal recyclers who are not associated with any cooperatives, or the wet solid waste from privately managed generators.

Collection and transportation services for source-separated waste are provided. The city is divided into seven zones for the wet waste segment and the service is carried out by seven private urban sanitation companies and the government agency for Urban Hygiene, using rear or side loading compactor trucks. Wet waste is transported to three transfer plants (Pompeya, Flores and Colegiales), where the waste is compacted into trucks with a greater capacity. For the dry waste segment, the city is divided into 12 areas, which are managed by 12 cooperatives that group 5,500 informal recyclers together with the Ministry of Environment and Public Space under the Government of the City of Buenos Aires.

Each cooperative is assigned a zone where they must commit to collecting source-separated waste from residents. The material recovered should then be transported to a place where it can be classified and conditioned for its onward sale to the recycling industry. This task is carried out across eight Green Centres, or collection centres, managed by grassroot recycler cooperatives who have at their disposal, to a greater or lesser extent, the necessary equipment for pre-processing recyclable materials. A significant amount of material is also recovered by informal recyclers who are not affiliated with any association or cooperatives, and who enter the informal recycling circuit via intermediaries who purchase recyclable mate-

rial in the City of Buenos Aires or surrounding municipalities.

Before final disposal in the Norte III Environmental Complex, 1,100 tons are processed on a daily basis by the Mechanical Biological Treatment Plant (MBT), where the organic segment is biologically stabilised (reducing its volume) to later be used as a cover layer for the sanitary landfill. Finally, almost 3,200 tons of waste is disposed of at the sanitary landfill site.

Brief description of grassroots recyclers

Very few informal recyclers working in the City of Buenos Aires actually live in the city. The majority travel from various surrounding neighbourhoods, mainly the municipalities of Lanús, Lomas de Zamora and San Martín, among others. It is estimated that on a daily basis, between 9,000 and 10,000 informal recyclers travel to the city for work (although according to the city's *Registro de Recuperadores*, or "Recycler Registry", the number is closer to 12,000), of which 5,324 are associated with 12 cooperatives currently contracted by the Government of the Autonomous City of Buenos Aires. They conduct door-to-door recovery of source-separated waste, or domiciliary collection, as well as the recovery of waste found in containers and green zones distributed around the City, and the classification and conditioning of the recovered waste in green centres for onward sale to the recycling industry.

There are eight green centres in the city, managed by nine of the 12 cooperatives. The remaining three either have their own sheds or rent them. Of the 5,500 recyclers, 3,000 are associated with a single cooperative (*El Amanecer de los Cartoneros*), led by The Movement for Excluded Workers (*Movimiento de Trabajadores Excluidos, MTE*). The movement doesn't just group informal recyclers within the City of Buenos Aires, but also those in nearby municipalities, especially the neighbourhoods of Villa Fiorito (Lomas de Zamora) and Villa Caraza (Lanús).

Informal recyclers working under contract to the City receive a personal, monthly, economic "incentive" paid into a bank account, as well as welfare, personal accident insurance and a work uniform, while the Cooperatives commit to carrying out the task in an orderly way, adhering to hygiene and safety regulations, while guaranteeing a collection service for all residents and businesses within the assigned area.

For MTE associates living in Lomas de Zamora and Lanús, transportation from their homes to the workplace is also provided. The MTE has also inaugurated two day-care centres with night-time opening hours, one for 200 children in the municipality of Lomas de Zamora and another for 80 children in the City of Buenos Aires. However, they fail to meet current needs. Cooperatives have also received trucks on loan to carry out source-separated waste collection, or in some cases funding for the hire of a truck and driver, as well as fuel vouchers.

Incentives to work take two different forms: i) informal recyclers collect waste from the public road and then sell the collected materials independently on a daily basis (either within the City of Buenos Aires, or in other municipalities within the metropolitan area), earning approximately US$266; and ii) grass roots recyclers collect dry recyclable waste from green containers and sort and commercialise their materials in an associative way, obtaining better prices (in line with their daily productivity), and earning approximately double that of recyclers who use alternative methods.

Inclusive recycling challenges

The great advances made by the City of Buenos Aires in the area of inclusive recycling have set a precedent in the Latin American region. For the first time, the role of the *cartonero* (recycler) as a provider of a public service has achieved citywide recognition. Where these advances are most evident is in the formalisation of recycler cooperatives that are incorporated into the public urban hygiene system upon signing a contract with the City Government. Both parties take responsibility for the collection of source-separated waste, the existence of a government area to deal exclusively with recycler cooperatives, a personal incentive paid directly to each recycler, access to social services (health insurance), and access to classification and sorting centres (green centres) for cooperatives. In this way, activities that were previously carried out with no control

whatsoever are subsequently co-administered with both the State and the cooperatives sharing social responsibility.

However, there is a long road ahead. The financing mechanisms that support cooperatives are not wholly efficient, with resources seldom arriving on time or as described. This is largely related to a limited schedule of technical specifications for which a benchmarking model was not available at the time of establishment.

Although there is an area of government dedicated specifically to the relationship with grass roots recyclers, staff turnover is high, making continuity difficult for the implementation of public policies. Incentives are a large step towards formalising the sector, but they only reach those recyclers associated with cooperatives which themselves differ in terms of the functions they carry out. This in turn generates significant differences between them in terms of income. The challenge lies in achieving the progressive inclusion of new recyclers into the system, in accordance with the agreement between both parties.

The green centres constitute valuable infrastructure for the tasks carried out by cooperatives. However, currently none of the cooperatives have their own green centre with the necessary equipment. There have been cases where, due to storage issues, the green centres have reached maximum capacity for the management of recyclable waste. It is also necessary to strengthen the technical abilities of the cooperatives if the tasks laid out in the schedule are to be executed successfully. One of the pending tasks outlined in the schedule is the installation of day care at green centres.

The Government of the City does not supply information on its website about the amount of waste generated, recovered and disposed of at sanitary landfills, or data relating to registries of recyclers or cooperatives, suggesting that this information is not systematically collected.

The City of Buenos Aires has yet to genuinely seize the environmental and social benefits of the work of grassroots recyclers through its green city policy, as is evidenced in the way that budgets are allocated to waste management departments. It is necessary to strengthen the relationship between both parties if greater mutual benefits are to be achieved.

It is necessary to showcase the current system as an environmental, social and economically sustainable solution since it favours recovery, significantly impacting the volume of waste buried at the sanitary landfill and contributing to compliance with the *Ley de Basura Cero* (Zero Trash Law), (Law 1854 which sets concrete objectives for the reduction of buried waste). At the same time it presents an opportunity to consider the social dimension that the problem of waste acquires in Argentina, by way of the formalisation of thousands of workers who depend on waste for their livelihood. Another area of focus is that of building citizen awareness of the importance of separating solid waste at source with the objective of achieving a change in habits, thus increasing the volume of dry recyclable waste that is collected.

The conditions of a new schedule are currently under discussion and informal recycler cooperatives are asking that their acquired rights be respected, that contract/funding methods are revised and that any as yet unachieved working conditions laid out in the current schedule be considered. One of the topics to be addressed is the implementation of individual productivity incentives to strengthen the goals of increasing recyclable waste volumes and then subsequently decrease the quantity of waste destined for final disposal.

With regard to the market for recyclables, the centrality of the City of Buenos Aires facilitates an enormous network of intermediaries and recycling companies who contribute to the end of product life cycle. However, it is necessary to provide mechanisms that promote economic intervention mechanisms (market control) and regulations (Container Acts and/or extended producer responsibility) through joint efforts, which primarily include recyclers (cooperatives and associations) who have a profound knowledge of recyclable materials and their circuits.

Lima, Peru

City definition (unit of analysis):

The metropolitan municipality of Lima is situated on the Pacific coast of central Peru. It covers an area of 2,664 km^2, and is comprised of 43 districts distributed between four zones: Northern Lima, Central Lima, Southern Lima and Eastern Lima.

SOURCES:
Metropolitan Municipality of Lima. 2014 Solid Waste Environmental Management Plans (PIGARS for its Spanish acronym) for the Province of Lima 2015 - 2025.
http://censos.inei.gob.pe/censos2007/documentos/Resultado_CPV2007.pdf

Indicators	Lima, Peru
Population, city[1]	10,077,310
GDP (PPP) per capita, city[1]	US$1,810
Percentage of the population below the poverty line (%), city[1]	36.4%
Minimum monthly wage (US$), national[2]	US$217
Gini coefficient, city[3]	0.40
Unemployment rate (%), national[4]	3.8%
Informal employment(%), national[4]	74.3%
Percentage of urban housing in deprived neighbourhoods (%), national[3]	34.2%

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO

Brief description of the city's ISWM system

The collection of solid waste in Lima is carried out in two different phases allowing for a system whereby ordinary non-recyclable waste is collected by the same company that provides the urban cleaning service, while solid recyclable waste is collected by informal recycler cooperatives. Cooperatives that wish to form part of the recyclable waste collection system must be authorised by the municipality; to do otherwise is considered an illegal activity. Recyclers not pertaining to an association, and not in possession of an identification card confirming their association, are penalised. It should be noted that the companies that provide urban sanitaiton and non-recyclable waste collection are contracted by the municipality and receive payment for their service. Recycler cooperatives do not receive remuneration for their service, but rather for the commercialisation of the recyclable materials. Although citizens are to separate the waste before disposing of it, separation at source is still very precarious and cooperatives are unable to collect sufficient material. Furthermore, the programmes implemented by municipal authorities to improve separation at source rates have failed to correct the situation.

Municipal programmes relating to collection and recycling services vary. The municipalities populated by socio-economic class A and B are better organised (as is the case in La Molina, Surco, Miraflores and San Isidro). This differs greatly to municipalities where a denser population of socio-economic class D and E are concentrated in Los Conos. The quality of solid waste also differs according to class, and the denser materials found in class D and E municipalities require different handling, something that should be addressed in community training.

Brief description of grassroots recyclers

Approximately 40% of grassroots recyclers in Lima are associated with recyclers groups of an economic nature. Those pertaining to organisations with city permits collect waste from homes and then separate it at source. The rest of the recyclers collect waste from the roadside. These recyclers tend to specialise in one type of material that they commercialise through intermediaries, while organised recy-

clers take the waste they recover to separation plants before it is commercialised to industry or through other intermediaries. The government supports organised recyclers by way of vaccinations, uniforms, and in some cases, separating and baling equipment. However, the work is carried out using their own transport and many lack personal protection items. Unorganised recyclers, in contrast, receive no government support at all.

Inclusive recycling challenges

Firstly, efforts are required in Lima to improve the knowledge of citizens in relation to the adequate separation of solid waste at source. Secondly, the role of informal recyclers as collection service providers must be reconsidered, affording them the same rights as urban sanitation providers with regard to earning a fixed income. Thirdly, incentives are required that allow for the integration and formalisation of grassroots recyclers who have not yet accessed associative schemes. Fourthly, it would be advantageous to mobilise residents to improve their culture and behaviour regarding recycling through incentives for the best recycling results, including neighbourhood improvement, better security or traffic lights in neighbourhoods. Lastly, the working conditions of recyclers must be improved to ensure they have adequate vehicles and protection equipment for safeguarding their health and safety in the workplace.

Mexico City, Mexico

City definition (unit of analysis):

Mexico City is the capital city and largest city in the country, comprising 16 boroughs (which as of 2018 will be renamed to "Territorial Demarcation", whose governance will be the responsibility of "Mayors"):

Álvaro Obregón, Azcapotzalco, Benito Juárez, Coyoacán, Cuajimalpa de Morelos, Cuauhtémoc, Gustavo A. Madero, Iztacalco, Iztapalapa, La Magdalena Contreras, Miguel Hidalgo, Milpa Alta, Tláhuac, Tlalpan, Venustiano Carranza and Xochimilco.

Mexico City is the headquarters of the federal government and the nucleus of the Metropolitan Zone of the Valley of Mexico (MZVM) –the largest economic, financial, political and cultural hub of the country. It covers a surface area of 1,485 km^2.

SOURCES:
Mexico City http://www.cdmx.gob.mx/ciudad/
Government Bylaw for the Federal District. July 26, 1994 http://www.diputados.gob.mx/LeyesBiblio/pdf/10_270614.pdf
Ministry of the Interior. Specific Constitutions of the States and Bylaws of the Federal District http://www.ordenjuridico.gob.mx/constitucionEdo.php
Office of the President of Mexico. 2016. Promulgation of the Political Reform of Mexico City http://www.gob.mx/presidencia/articulos/promulgacion-de-la-reforma-politica-de-la-ciudad-de-mexico-19350

Indicators	Mexico City, Mexico
Population, city[1]	9,163,900
GDP (PPP) per capita, city[1]	US$36,410
Percentage of the population below the poverty line (%), city[1]	10.3%
Minimum monthly wage (US$), national[2]	US$91
Gini, city[3]	0.49
Unemployment rate (%), national[4]	4.1%
Percentage of employment that is informal (%), national[4]	53.9%
Percentage of urban housing in deprived neighbourhoods (%), national[3]	11.1%

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO

Brief description of the ISWM in the city

Waste collection and sanitation in Mexico City is the responsibility of the Ministry of Public Works and Services (SOBSE), through the Department of General Urban Services (DGSU) and the Boroughs[9]. Sweeping of streets and waste collection is undertaken by SOBSE for main arteries, and the Boroughs are in charge of secondary streets. The service employs 29,000 cleaning workers and covers 1,773 collection routes, 6,754 sweeping routes, 2, 60 waste collection vehicles, 12 transfer stations, two sorting plants, two compacting plants and eight compost plants.

Purportedly, the collection and transportation of waste is organised in such a manner that it is restricted to removing waste that is delivered to the garbage trucks by citizens when these vehicles make their stops. Under this scheme, citizens must go out to the street with their trash when they hear the bells announcing the arrival of the garbage truck. On designated days, organic waste is collected, and on alternate days inorganic waste (recyclables) is collected.

The citizens hand over their trash, with the assistance of personnel working the garbage trucks. In addition, there are personnel whose job it is to sweep the streets, and the waste they collect is also taken to the garbage trucks.

The reality is that a good portion of users compensate for the bothersome system of taking their trash to the trucks themselves by negotiating and arranging with the street sweepers to take their trash for a tip, thus making waste collection an informal door to door collection. The street sweepers, in turn, take the overall waste

9 Political and administrative territorial divisions in Mexico City.

they have collected to the trucks and share their tips with truck personnel. Garbage truck personnel also receive tips from users who prefer to personally take their trash to the truck. Sweepers and truck workers tend to separate the dry, recyclable waste to increase their monthly income through the sale of recyclable material at private recycling centres. In the same manner, drivers and truck personnel set up informal agreements for waste collection with large businesses and companies that generate large volume, receiving an extra tip. Street cleaners manually sort the mixed waste that users hand over to them; alternating organic and inorganic waste collection on different days, and sorting waste at the source, tends to occur only in certain parts of the city.

The driver of the truck is the one who organises both street sweepers and garbage truck workers and coordinates operations for the collection routes. The Government of the City pays low wages and plays an integrative role under a global income, where tips and the sale of recyclables represent the prevailing amount. Informal income justifies this in financial terms for the street sweepers and volunteers. These workers do not receive wages yet have to strictly abide by the designated routes, schedules and tasks as instructed by the local borough authorities and union representatives. Informal income is essential to carry out this service given that salaries are insufficient and, in many cases, tips are the sole income of the personnel involved in sanitation and cleaning work.

Estimates put waste generated in Mexico City at 12,800 tons per day, of which nearly 1,950 tons are earmarked for the recycling value chain, thanks to the work of sanitation workers (estimated 1,620 tons of recyclables collected), and to the work of recyclers (291 tons estimated); the rest of the waste is transported to sanitary landfills, cement plants and compost plants. The 1,620 tons sorted by the city cleaning and waste workers are directly and informally taken from the streets into the recycling value chain. The remaining 291 tons are sorted at two major sorting plants (Santa Catarina and San Juan Aragon), where the members of the three informal recycling organisations use space and materials provided by the city government. These 291 tons represent 17% of the flow received daily at sorting plants, coming from some of the transfer stations that collect the waste on the streets (recyclables recovered by recyclers are those materials that the cleaning and waste workers do not manage to sort on the street). Recycled material sorted by recyclers is sold partially to the unions (who then sell to middlemen or industry) and partially to middlemen.

Brief characterisation of grassroots recyclers

Grassroots recyclers in Mexico City are divided into two main segments: i) cleaning workers and ii) recyclers.

Cleaning workers number nearly 29,000 and are divided, for operational purposes, into drivers, helpers for trucks and street sweepers: 14,144 receive wages, close to 5,000 are temporary workers, and nearly 10,000 are "volunteers". The 10,000 "volunteers" usually play a role in operations involving truck personnel and street sweepers; they have no salary whatsoever and are not officially employed by the Government. The "volunteers" take part in the system to receive payment through informal means (tips and the sale of recyclables sorted on site) and to be in line waiting for a chance to be hired formally.

These operations cells comprise truck personnel and street sweepers, and they are coordinated by their drivers. The cleaning crew workers are represented by a Union ("Section One of the SUTGDF"; in English, the Union for Workers of the Federal District Government). This union defends their interests and submits their applications to public administration. It is democratically constituted and performs, in part informally, roles as human resources leaders and operational coordinators (through 361 supervisors). Recyclers number close to 3,500 and are organised in three unions: *Unión de Pepenadores del D.F. Rafael Gutiérrez Moreno AC* (Union of Recyclers of the Federal District Rafael Gutiérrez Moreno); *Frente Único de Pepenadores, AC* (Sole Front of Recyclers); and *Asociación de Selectores de Desechos Sólidos de la Metrópoli*, AC (Association of Solid Waste Sorters of the Metropolis). These recyclers work in sorting plants in Santa Catarina and San Juan Aragón, using spaces and machinery that is

provided by the Government of Mexico City, based on agreements and minutes within their unions.

Inclusive recycling challenges

Mexico City faces diverse challenges as concerns inclusive recycling. First of all, there is a lack of trust between the city's public administration and informal recyclers. Local public administration considers recyclers (and their activity) to be an obstacle that hinders the evolution of solid waste management in the city, and tolerates their existence and type of work to avoid conflict with unions. Nevertheless, public authorities who are in direct contact with cleaning and waste workers' operations coordinate with the Union the current scheme; consequently formal intervention and informal activity are fully integrated. This synergy between the public sector and the waste workers allows for the collection, sweeping up, transportation and recovery of urban waste in the entire city, thanks to this particular way of managing the situation and to informal incomes. On the other hand, there is no resounding proof to indicate that a centralised or privatised service if applied would lead to the attainment of comparable results and efficiency.

Secondly, the main challenges identified include the formal recognition of operational and economic processes carried out by recyclers street cleaners and informal recyclers); for the purpose of formalising and rendering the existing system more efficient, and consequently improving performance in environmental, economic, sanitary and social terms and raising the quality of service provided to citizens.

Recognising and outlining processes will make it possible to build the social inclusion of recyclers and strengthen their democratic participation in union administration as well. It is imperative to build proposals that arise from the informal recyclers, and these must be technically and normatively adequate. The recognition of existing processes and the identification of a native and independent model are indispensable for the reengineering of processes that are lacking, such as: i) implementing genuine sorting of solid waste at the source, ii) improving working conditions for informal recyclers; and iii) encouraging the generation and consolidation of mechanisms to ensure control and transparency of the ISWM system.

In the case of street sweepers and cleanliness workers, it is necessary to consolidate and regulate the micro-enterprise nature of the operational and socio-economic cells, recognising existing leaders of operations and formalising and rendering equitable the deeply ingrained public-population synergy.

Montevideo, Uruguay

City definition (unit of analysis):

The city of Montevideo is organised into eight municipalities that work as local government bodies and as the territorial jurisdiction where local governments are established. Montevideo is made up of the following municipalities: A, B, C, Ch, D, E, F y G.

SOURCES:
National Directorate of Official Printing and Publications (*Dirección Nacional de Impresiones y Publicaciones Oficiales*). 2009. Law No. 18567 *Descentralización en Materia Departamental, Local y de Participación Ciudadana* https://www.impo.com.uy/bases/leyes/18567-2009
Municipality of Montevideo. November 2013. Census Report 2011: Montevideo and Metropolitan Area http://www.montevideo.gub.uy/sites/default/files/informe_censos_2011_mdeo_y_area_metro.pdf

Indicators	Montevideo, Uruguay
Population, city[1]	1,716,023
GDP (PPP) per capita, city[1]	US$24,149
Percentage of the population below the poverty line (%), city[1]	22.0%
Minimum monthly wage (US$), national[2]	US$249
Gini coefficient, city[3]	0.43
Unemployment rate (%), national[4]	8.1%
Informal employment (%), national[4]	33.2%
Percentage of urban housing in deprived neighbourhoods (%), national[3]	N/A

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO

Brief description of the city's ISWM system

In 2011, the Municipality of Montevideo (IM for its Spanish acronym) renewed the concession for the collection of urban solid waste to the firm, Consorcio Ambiental del Plata (CAP), for 7 years. This concession only covers the old part of the city, the centre and few areas of influence in the centre. Throughout the rest of the city, collection is done by municipal personnel. It is worth mentioning that a system of street containers was implemented for the selective collection of urban solid waste. Thus, the separation of solid waste at source was introduced in Montevideo. Waste is transported to the Felipe Cardoso sanitary landfill, which receives approximately 1,400 tons of Montevideo's waste on a daily basis.

In 2013, the same company began to provide urban waste services to large producers, shops, banks, businesses in general, and entities that should contract this service. The service can also be carried out by other transport companies (according to regulations they can transport but not sort the waste that they recover) by way of private contracts between transport companies and privately-owned enterprises.

With the deployment of the Non-Reusable Container Act (*Ley de Envases no Reutilizables*), in 2007 the IM began to work in the collection of containers, transporting them in trucks to large producers. The CAP and IM trucks (which transport solid waste recovered from separated waste containers on the streets and other containers around the city) drive to 4 container-sorting plants that are monitored by a Trust (composed of the Ministry of Social Development, The Municipality of Montevideo and the Chamber of Industry). These plants are operated by former recyclers, many of whom were prohibited from entering the city once the new street containers were installed.

Brief description of grassroots recyclers

There are no specific figures available on informal recyclers, but it is estimated that there are between 3,000 and 5,000 people working in the recovery of materials. Informal recyclers are divided into various groups:

a) Those that work in the 4 sorting plants under the container law. They are employed by the Trust, and, as such, are provided with a

place of work, a fixed salary and social benefits.

b) Those who are integrated into one of the 5 cooperatives currently operating in Montevideo and who provide their services to businesses and not to the municipality. Although they have internal management issues, they are still well organised.

c) Those who work as drivers and provide their services to large producers by collecting urban waste, and who, in principle, can transport the recoverable materials, but may not sort them.

d) Finally, those who work informally and individually (or in family), or in the Felipe Cardoso Sanitary Landfill. This group has the worst employment situation and is not associated. The Union of Urban Solid Waste Sorters (*Unión de Clasificadores de Residuos Sólidos, UCRUS*) offers them some coverage and according to various sources, has certain power to exert pressure on the government in favour of recyclers in Uruguay.

Inclusive recycling challenges

One of the greatest challenges is to facilitate the easiest possible access to recyclable material while at the same time, avoiding problems and unrest among neighbours. PET recovery plants have managed this successfully.

Having become accustomed to the steady income their jobs provide, sorting plant operators are not adequately incentivised to sort more material than they currently do. Incentives should be created as a way of increasing their income while achieving greater efficiency at the same time. Likewise, improvements need to be made to the collection, separation and transportation systems so that waste arrives in better conditions.

The work of recyclers must be recognised, and training and financial support programmes must be implemented if they are to progress along the recycling value chain, and find new sources of waste at the same time.

Quito, Ecuador

City definition (unit of analysis):

The city of Quito is made up of 32 urban parishes and 33 rural and suburban parishes. Each parish is composed of neighbourhoods. The Metropolitan District of Quito (*Distrito Metropolitano de Quito*) is divided into eight administrative zones enabling the decentralisation of some municipal services.

SOURCE:
Municipality of the Metropolitan District of Quito
http://www.quito.gob.ec

Indicators	Quito, Ecuador
Population, city[1]	1,753,997
GDP (PPP) per capita, city[1]	US$21,057
Percentage of the population below the poverty line (%), city[1]	40.7%
Minimum monthly wage (US$), national[2]	US$318
Gini coefficient, city[3]	0.51
Unemployment rate (%), national[4]	4.8%
Informal employment (%), national[4]	56.4%
Percentage of urban housing in deprived neighbourhoods (%), national[3]	36.0%

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO

Brief description of the city's ISWM system

Integrated Sustainable Waste Management Services in Quito are provided by two metropolitan public enterprises: the *Empresa Pública Metropolitana de Aseo*, or *EMASEO*, (the Metropolitan Public Cleansing Company) in charge of sweeping, collection, transportation and transfer services, and the *Empresa Pública Metropolitana de Gestión Integral de Residuos Sólidos*, or *EMGIRS-EP*, (the Metropolitan Integrated Sustainable Waste Management Company), in charge of recovery and final disposal. Average waste production per capita is 0.80kg per person per day: approximately 2,000 tons are collected per day and the collection service has a coverage rate of 98%. The payment for these services is collected by way of a percentage applied to electricity bills (15%). In 2003, the open-air dumpsite was closed and the "El Inga" Sanitary Landfill site (40km from the city) was opened. Quito has two transfer stations, ET Norte in the North, and ET Sur in the South, where waste received from various sectors of the city is compacted before being sent to the Sanitary Landfill. Sorting processes are carried out at the Transfer Stations. Sorting is done manually at ET Norte by over 200 grassroots recyclers, and mechanically at the ET Sur where a separating plant was implemented and has been in testing phase during 2016. Collection services for source-separated waste currently reach 8% of the population and are provided by 111 grassroots recyclers who, together with the municipality, carry out collection, transportation, sorting and storing. Four storage centres, or Centres for Environmental Education and Management (*Centros de Educación y Gestión Ambiental, CEGAM*), have been set up are strategically located around the city.

With regard to civil society in Quito, there are initiatives and projects driven by cooperatives, NGOs and foundations. There are also citizens groups and neighbourhood groups that encourage separation at source and the direct recovery of waste by grassroots recyclers. There are also programmes for training, assessment and linking ISWM stakeholders, all of which aim to make recycling sustainable and inclusive through the recognition of grassroots recyclers as service providers, and their formalisation.

Brief description of grassroots recyclers

There are over 2,400 informal recyclers in the city of Quito of which 70% are female. At national level, only 6% of recyclers have formally organised[10], mostly through the creation of associations. However 50% of grassroots recyclers are interested in forming part of formal associations. 100% of the 11 recycler organisations in Quito are led by women. The majority of informal recyclers work under precarious conditions, collecting waste by foot, before the EMASEO collection truck arrives. The areas where recyclers work are delimited based on historical practices. The majority of recyclers pay for the transportation of recovered materials. They transport the recyclables to their homes or to warehouses of recyclers' organisation, where they can be sorted and commercialised through intermediaries. Additionally, the majority of associations sell the materials to intermediates on the same streets where collection has been carried out. A minority of recyclers work in coordination with the Municipality of Quito and sell directly to recycling plants.

Inclusive recycling challenges

The main challenges facing the city in relation to inclusive recycling are the following: i) to establish a process for separation at source and recovery of the material since there is a system of containerisation being implement (which will eventually cover 80% of the city) ii) to certify over 2,400 grassroots recyclers who carry out their activities in different sectors of the city, iii) the formal include 50% of grassroots recyclers in Integrated Sustainable Water Management Systems until 2025, in line with the goals set out in the Integrated Sustainable Waste Masterplan (*Plan Maestro de Gestión Integral de Residuos Sólidos*), and iv) to design and implement a payment policy for services provided by grassroots recyclers.

10 Inclusive Recycling and Grassroots Recyclers in Ecuador, Regional Initiative for Inclusive Recycling (IRR) 2014-2015

San Jose, Costa Rica

City definition (unit of analysis):

The San Jose Canton covers an area of 44.62 km^2 and is composed of 11 urban districts, which together with 30 other cantons, make up the Greater Metropolitan Area (*Gran Área Metropolitana, GAM*).

SOURCES:
Website of the Municipal of San Jose: www.msj.go.cr
Comptroller General of the Republic, Operations and Evaluative Auditing. "*Auditoría Operativa Recolección de Residuos Ordinarios*" (Performance Auditing Ordinary Waste Collection). 2016

Indicators	San Jose, Costa Rica
Population, San Jose Canton[5]	349,152
Population, city[1]	1,183,448
GDP (PPP) per capita, city[1]	US$28,909
Percentage of the population below the poverty line (%), city[1]	21.2%
Minimum monthly wage (US$), national[2]	US$417
Gini coefficient, city[3]	0.47
National unemployment rate (%), national[4]	8.4%
Percentage of employment that is informal (%), national[4]	31.5%
Percentage of urban housing in deprived neighbourhoods (%), national[3]	5.5%

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO
5 www.msj.go.cr

Brief description of the city's ISWM system

The Department of Environmental Services (*Departamento de Servicios Ambientales, DSA*) and specifically the Collection Services Section (*Sección de Servicios de Recolección*) is responsible for the solid waste collection and transportation system in San Jose Canton. There are 22 collection trucks that deliver the service under a scheme that divides the canton into 5 sectors. The only sector within the canton that is not directly serviced by the municipality's waste collection service is the Ciudadela La Carpio. This part of the canton is serviced under an agreement with Berthier EBI de Costa Rica S.A., the company that manages the La Carpio Sanitary Landfill. Moreover, there are public and private sector clients who generate special waste (such as hospital waste and used tires) that are served by privately-managed collection services. Solid waste is disposed of at La Carpio Sanitary Landfill which began operation in 2001 and has an estimated lifespan of 15 to 20 years. There are different options currently being evaluated to extend the lifespan of the sanitary landfill, such as the distribution of the final disposal in 2 sanitary landfills rather than one.

Recycling is an emerging topic in the canton. Despite a municipal recycling program that has been in place for 6 years, less than 1% of the total waste produced is recycled. The municipality implemented a system of source-separated recyclable waste collection: it is directly responsible for the collection and transportation of recyclable waste which has been previously separated by local organisations or individual users and includes paper, cardboard, plastic, metals, glass and Tetra Pak. Collection is organised across 11 routes, one for each district in the canton. The recovered recyclable waste goes to the Valuable Materials Recovery Facility (*Centro de Recuperación de Materiales Valorizables*) located in the Hatillo District, where it is weighed, sorted, packaged, stored and sold. It covers an area of 2,000 m^2 of which buildings occupy 500 m^2. A team of 27 people work in the facility as well as in ground collection.

To advance recycling, the municipality has implemented 3 models for selective collection:

1. Collection carried out by "*socios ambientales*" (environmental partners) across the 11 districts: individual homes or groups of neighbours who are organised, separate their waste before requesting the municipal service. This also includes businesses, shops and banks.
2. Campaigns: 280 campaigns a year consisting of ground activities for selective collection in neighbourhoods, and the installation of spaces in parks and public areas where people can drop off their separated waste.
3. The empowerment of community organisations for the collection service for source-separated waste, through community training. Directly or through NGOs or students, the community is educated in the identification and separation of recyclable waste, improving the relations between neighbours and the company that purchases the materials. In San Jose, there are community organisations that have benefitted from public programmes and projects, earning income from the sale of recyclable materials or handicrafts.

The municipality aims to identify the group of informal recyclers so that they can work with community organisations, in order to create new alliances in integrated waste management within the canton. The idea of the municipality, in conjunction with the Ministry of Health, is to establish a network of different types of recyclers (community and informal), that mobilises the recycling economy. According to the National Strategy for the Separation, Collection and Recovery of Waste (*Estrategia Nacional de Separación, Recolección y Valorización de Residuos*) the goal of the municipality is to be recovering 15% of all recoverable waste within the next 4 years. Given that they currently recover less than 1%, a joint effort between all stakeholders is the way forward.

Brief description of grassroots recyclers

In the Municipality of San Jose there is an awareness of the existence of grassroots recyclers operating in the canton, especially around commercial areas. However, they are associated with homelessness, health problems and addictions. The sector was completely ignored during many years and it was considered to be an issue of urban aesthetics. In fact, the municipality considered inclusive recycling or grassroots recyclers the community organisations – consisting particularly of female heads of households- who they incentivised to work in recycling within the canton.

Following the decline of the role of community organisations in the municipal recycling system due to a lack of economic stimuli, the low rate of recovery and the low sale prices of recyclable materials, the municipality is looking with interest at the role the informal sector might play as partners in municipal recovery objectives. The role of the Ministry of Health as the governing body in waste management has been important for this new vision of recycler inclusion, which is embodied in the National Strategy for the Separation, Collection and Recovery of Waste. In this spirit, in 2017, the Municipality of San Jose, together with the Ministry of Health, plan to launch information-gathering activities on informal recycling to develop formalisation and coordination strategies for recycler in order to increase recovery rates.

The Ministry of Health have become more sensitive, going from an attitude of scrutiny and exclusion to one of inclusion and seeks to integrate grassroots recyclers into the new solid waste management process. There is still much to be done but there is an established public policy framework called the National Strategy for the Separation, Collection and Recovery of Waste (2016).

There were a significant number of grassroots recyclers based at the Río Azul Dump (located in the San Jose Canton until 2000) but they were removed when the dump closed. Various stakeholders supported the relocation and adaptation of these recyclers but there is no record of what happened. Possibly, they started working on the streets. There is a significant

population of people who recover recycled materials on the street, mainly cardboard and metals. However, to date the municipality does not have good information to understand the informal recycling landscape in the canton.

Outside of the metropolitan area there are other recycling initiatives in place. Some municipalities, for example in the provinces of Guanacaste and Punta Arenas, either on the initiative of officials, or due to grassroots recycler relationships or management, have developed alliances or efforts to strengthen or further involve grassroots recyclers in selective recovery. However, this process is not applied in San Jose.

Inclusive recycling challenges

There are various challenges facing San Jose with regard to inclusive recycling. Firstly, recycling is still at an incipient stage in Costa Rica. Some recycling initiatives have worked well, but the recovery percentages are very low, as is the case in the Municipality of San Jose. The majority of recyclable waste ends up in sanitary landfills or in the environment. Municipalities have not played a primary role in the collection of source-separated recyclable waste and the strategy of promoting community enterprise as a way of encouraging recycling has been unsuccessful. Society's attitude towards waste management is unhelpful and as such, recovery management systems should be accompanied by ongoing efforts to provide awareness and educate citizens so that attitudes may be changed. Secondly, the participation of informal recyclers in the value chain is low. Lastly, perhaps the greatest challenge is establishing funding in accordance with the challenges laid out in the National Strategy for the Separation, Collection and Recovery of Waste. It is important to note that this strategy does not have resources but rather aims to "redirect" existing resources. This might be an obstacle to future progress.

Santa Cruz, Bolivia

City definition (unit of analysis):

The city of Santa Cruz is made up of 12 urban districts (upon which this study is based) and four rural districts including: Piraí; Norte Interno; Estación Argentina; El Pai; Norte; Carretera a Cotoca; Villa 1° de Mayo; Plan 3.000; Palmasola; El Bajío; Central; Nuevo Palmar; Viru Viru; El Dorado; Guapilo; Palmar del Oratorio.

SOURCES:
http://www.concejomunicipalscz.gob.bo/portal/index.php/participa/mapas-importantes/mapas-de-los-distritos
http://www.ine.gob.bo/indice/atlasmunicipal.aspx

Indicators	Santa Cruz, Bolivia
Population, city[1]	2,184,403
GDP (PPP) per capita, city[1]	US$8,097
Percentage of the population below the poverty line (%), city[1]	68.3%
Minimum monthly wage (US$), national[2]	US$261
Gini coefficient, city[3]	N/A
Unemployment rate (%), national[4]	3.9%
Informal employment(%), national[4]	75.1%
Percentage of urban housing in deprived neighbourhoods (%), national[3]	43.5%

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO

Brief description of the city's ISWM system

The decentralised municipal company EMACRUZ is in charge of the collection of solid waste in the city of Santa Cruz. A Brazilian company was awarded the contract for a period of 5 years following an international tender in 2013. The terms of reference of the tender set out conditions relating to the management of recycling which led to the creation of a series of infrastructure to facilitate recycling among citizens.

The company has regular collection vehicles as well as source-separated waste collection vehicles. The regular collection service covers almost the entire city and the frequency of collection varies according to population density (between1 and 4 days per week), while the source-separated waste collection service has been implemented in 5 of the city's 12 urban districts and is carried out once or twice a week using 12 transport units with 3 people in each. Waste from the source-separated waste collection is received at the Normandía plant, where it is sorted by a group of 50 informal recyclers that work there.

To support the implementation of the service, awareness campaigns are carried out and training is given to citizens and civil servants. These campaigns are carried out by the contracted company, as well as by EMACRUZ, usually with the assistance of university volunteers in both cases. The collected waste is disposed of at the city-owned sanitary landfill site in Normandía under the management of the contracted company. A new tender is expected in 2018, and the invitation to tender will be open to national companies, making it possible for informal recycling associations to be incorporated into the municipal system.

Brief description of grassroots recyclers

The majority of recyclers (80%) are women. Recyclers originate from the city's poorest districts or from more rural populations in the surrounding areas, fleeing domestic violence with their dependent children. Waste collection provides these workers with a source of income for which few requirements are necessary. The recyclers work during the night before the city truck arrives and removes all of the waste bags left on the streets or in containers. They are subject to

insults and harassment from residents who accuse them of opening bags and leaving the contents spread over the ground.

Over time, the recyclers have organised themselves into small unincorporated associations, seeking greater understanding and fellowship rather than any real benefit. However, they have evolved to create associations with minimum governance structures. Under an MIF project, in 2011 the Santa Cruz Recycler Network (*Red de Recolectores Santa Cruz*) association obtained legal status as well as business training which has improved over time, although they could benefit from support in developing their capacities as an association.

Inclusive recycling challenges

Door-to-door selective (or source-separated) waste collection should be introduced by the municipality. This would improve recyclable material collection rates, and could be carried out by recycler associations. At the same time, data collection systems need to be improved to evaluate progress and so that plans may be adjusted according to results.

Recycler associations need better training. Moreover, a higher number of formalised and incorporated associations would afford them a much stronger negotiating position before governments, intermediaries and recycling companies. Training and formalisation would also enable associations to offer environmental services.

Citizens have little knowledge about the reality facing informal recyclers who carry out a very difficult job. Recyclers' work would be made easier if citizens separated their waste.

Santiago de Chile (Commune), Chile

City definition (unit of analysis):
The Commune of Santiago was used as the main focus for this study and within the regulatory category, achievements were compared with four other communes: Las Condes, Providencia, Maipú and La Pintana. The Commune of Santiago is the municipal capital of the Province of Santiago, which includes 31 municipalities. The Province of Santiago is one of the six provinces that make up the Metropolitan Region.

SOURCES:
Intendencia de Santiago. 2012. Geographical information http://www.intendenciametropolitana.gov.cl/informacion_geografica_2.html
Ilustre Municipalidad de Santiago. National population and housing Census and Characterisation Survey Social.http://www.observatoriosantiago.cl/estadisticas-comunales/

Indicators	Santiago de Chile, Chile
Population, Commune of Santiago[5]	372,330
Population, City of Santiago (32 communes)[1]	6,548,982
GDP (PPP) per capita, city[1]	US$25,267
Percentage of the population below the poverty line (%), city[1]	27.7%
Minimum monthly wage (US$), national[2]	US$299
Gini coefficient, city[3]	0.56
Unemployment rate (%), national[4]	7,0%
Informal employment(%), national[4]	35.8%
Percentage of urban housing in deprived neighbourhoods (%), national[3]	9.0%

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO
5 National Institute of Statistics

Brief description of the city's ISWM system

Waste management is carried out by each municipality and there is no administrative body at regional (Metropolitan Region) or provincial (Province of Santiago) level. There are alliances of municipalities that provide some of their services in an associative way. Generally, the majority of the municipalities within the metropolitan region manage their waste from a collection and final disposal perspective, with communal recycling programmes as an additional waste management service. According to figures from the Regional Secretary of the Ministry of Environment, 2.9m tons of waste were disposed of in authorised areas of the Metropolitan Region during 2012.

The Commune of Santiago produces 184,706 tons of waste annually, a figure that is expected to rise due to the growth of urban densification in the commune over the last decade. In contrast to the majority of communes within the Metropolitan Region that have outsourced the service, the Municipality of Santiago uses its own trucks and personnel, directly controlling the whole waste collection process before it is sent for final disposal: the disposal stage of the process is outsourced to KDM, who operates the Quilicura Transfer Centre and the Loma Los Colorados sanitary landfill site. The Department of Sanitation and Landscaping (*La Dirección de Aseo y Ornato*) is the unit responsible for collection and transport and operates in 100% of the communal territory which is divided into 4 zones: East, West, Mid-Eastern and Mid-Western. The frequency of collection and collection times are established according to the characteristics of each zone.

Due to strong growth in the residential sector over the last decade and the historic presence of a commercial and service sector specific to a "capital commune", the collection system has been adapted according to the demands of its diverse users.

In 2014, as a result of the 2014-2020 Communal Development Plan (*Plan de Desarrollo Comunal, PLADECO*), the Municipality implemented

a recycling programme made up of the following components:

1. Door-to-Door Programme: Recyclables collection service, implemented with informal recyclers, which is operated as a pilot programme in 2 of the commune's neighbourhoods. The programme is supported by the municipality in the form of personnel, loading trucks, infrastructure and equipment, for the collection, transport, separation and sale of waste to recovery companies
2. Network of Recycling Points: Drop-off points for recyclables along the roadside. Even though campaigns have been carried out to educate people in the use of these points, they have been inefficient. In the future, the idea is to remove these points from the roadsides and build a large 1,000 m^2 recycling centre, for which the municipality already has the approved public funds.
3. Environmental Education Centres: educational spaces open to the community that

Analysis of the communes of Las Condes, Providencia, Maipú and La Pintana

Although Santiago de Chile is generally known as a single city, in reality the city does not consist of a single political and administrative body. Rather it is made up of the 37 communes that form the Metropolitan Region of Santiago, 32 of which are located within the Province of Santiago. The Commune of Santiago was used as the study's main focus, and any achievements were compared with the regulatory category of the other four communes: Las Condes, Providencia, Maipú and La Pintana.

To understand the similarities and differences between the Commune of Santiago and other communes, achievements based on secondary sources within the regulatory category were compared to data on recyclers in Las Condes, Providencia, Maipú and La Pintana provided by national recycling leaders.

None of these communes mention the inclusion of informal recyclers in their current legal frameworks. La Pintana is the only commune that explicitly mentions recyclers in its communal strategy for global change, recommending that recyclers be incorporated into the collection of source-separated recyclables. The municipal plan in La Pintana dictates that residents must give their paper, cardboard and metal to the recyclers who accompany the waste collection trucks. However, there is no information on whether a system like this is operating formally within the commune.

The Commune of Maipú has four recycler organisations with almost ten years of experience and approximately 400 recyclers, of which almost 200 are registered with the municipality and have authorisation to work independently within the commune. In recent years, they have achieved greater visibility and have developed their collaborative relationship with the municipality. However, they have not managed to establish a system for the collection of recyclables at the communal level, since the majority of the recyclers in this commune are dedicated to the reutilisation of waste rather than its recycling, as it is considered more profitable.

The Municipality of Las Condes maintains a functional, though not formal, relationship with recyclers who work within the commune. It is estimated that 500 families are involved in this activity and that 80% of recyclers who work in this commune come from other communes.

Although the Commune of Providencia has a system of drop-off points known as "puntos limpios" (containers for the separation of recyclables, found in public spaces) as well as source-separated waste collection, it does not consider the inclusion of grassroots recyclers who work informally within the commune.

No formal census of recyclers has been carried out in any of the four communes.

Regarding transparency and inclusion in tenders, Chilean municipalities are obligated to use the portal Mercadopublico.cl to announce tenders, purchases and public contracts of large amounts. Therefore, a basic level of transparency applies to all of the municipalities, although this system does not contain specific clauses for the inclusion of grassroots recyclers.

There is no evidence of solid waste management strategies being developed using participative methodologies, although the existence of community councils guarantees that the opinions of groups within civil society are consulted regarding these policies. The commune of Providencia is currently developing a new Environmental Ordinance that does follow participative methodology.

Although the communes analysed do hold workshops on environmental education and recycling, only Maipú carried out specific workshops and communications efforts to highlight the importance of including informal recyclers.

Specific proposals for inclusive recycling were not found, nor were specific incentives for grassroots recyclers or systems for the gathering of information on inclusive recycling. Only Providencia offers positive recycling incentives for users, having already given away 300 composting kits. The rest of the municipalities only encourage recycling by way of obligatory regulations and possible fines.

Regulations for the classification and handling of hazardous waste have been established by the national government, with municipalities only differing in their level of implementation.

are also used as a centre for the recovery and sorting of recyclables under the Door-to-Door Programme, as well as organic waste for making compost.

4. "*Recicla Fácil*" (Recycling Made Easy) is a programme implemented in 80 buildings and completely outsourced to the metropolitan waste company *Empresa Metropolitana de Residuos* (EMERES).

Brief description of grassroots recyclers

Although a census has not been carried out in the Metropolitan region, there are approximately 6,000 grassroots recyclers according to estimates by the National Chilean Recycler Movement (*Movimiento Nacional de Recicladores de Chile, MNRCH*), a percentage of which has officially organised. Also according to the MNRCH, they are in contact with at least 15 organisations in the communes of Quilicura, Cerrillos, Maipú, Estación Central, Quinta Normal, Santiago, Recoleta, Peñalolén, Puente Alto, San Bernardo y El Monte.

Informal recycling in the Metropolitan Region follows the routes taken by recyclers from the lower income communes and residential neighbourhoods—where recyclers usually live—to the commercial and residential areas of higher income communes, as they search for quality and quantity in recyclable and reusable waste. It is important to note that the majority of grassroots recyclers in the Metropolitan Region are involved in recovering recyclable and reusable materials such as unwanted domestic appliances or clothes. The reusable material is either repaired or sold directly in fairs or via intermediaries.

Since recycling is market-based, recyclers must be selective when it comes to recovering recyclable or reusable waste, giving priority to the most cost effective materials. Paper, cardboard, tins and scrap are among the recyclable materials most recovered by recyclers.

The Commune of Santiago with its office zones and commercial nature is a highly attractive area for the collection of recyclable waste. Historically, informal recycling systems have sustained an important number of waster pickers and intermediaries who collect recyclable waste directly from roadsides, especially in areas of commerce and services. The Chilean National Recycler Movement estimates that there are between 200 and 300 recyclers in the Commune of Santiago, especially in areas where the generation and quality of recyclable materials is greater. Informal recycling works by integrating recyclers, intermediaries, buyers and users, especially offices and businesses that in certain cases sell the material directly. Due to the fact that the majority of recyclers lack a space where they can better collect and sort the material, informal recyclers and users separate recyclable material at the roadside so that it can be commercialised without going through the temporary collections service.

Since 2014, the Municipality of Santiago has carried out the Municipal Recycling Programme which takes into account the inclusion of informal recyclers. Seven recyclers, who are registered with the municipality, participate in the programme which promotes the source-separated recovery of recyclable waste by way of door-to-door recovery, the recovery of voluminous waste for reuse or recycling, programmed recovery from fixed sources, punctual recovery and recovery from designated collection points in buildings within the commune. The programme is still in early stages but aims to establish itself as a municipal alternative for recycling waste, alongside other alternatives that operate within the programme but do not consider recycler inclusion. The system is operated under pilot mode, with one truck taking different collection routes according to a schedule that has been agreed on with the system users. This truck leaves the recovered waste at the Temporary Collection and Recycling Point (*Punto de Reciclaje y Acopio Transitorio*) at Parque Quinta Normal, where waste is collected, sorted and prepared for sale by two recyclers in charge of recycling. Once the material is separated and prepared, it is taken by the same truck to be sold. Reciclados Industriales (www.recicladosindustriales.cl) has an agreement to purchase all materials recovered by the system: paper, cardboard, tins, PET and Tetra Pak. The agreement gives informal recyclers access to better prices, especial-

ly small scale recyclers who do not achieve the quantities that would allow them direct access to recovery companies.

According to the Metropolitan Region's Social and Professional Register of Recyclers (*Catastro Socio Laboral de Recicladores*) produced by the Casa de la Paz Foundation and the Chilean National Recyclers Movement in 2015, a sample of 84 recyclers working in the Commune of Santiago were on average 49 years of age, and had been working in recycling for 16 years. Of these, 82.1% have not formally organised, 85.7% believe that they receive very little help from people and institutions, and 95.6% declare themselves to be affiliated with a public or private health care system.

Also, 70.3% use human–powered vehicles to carry out their work, 51.8% stockpile the recyclable material in their homes while 48.2% do not store the waste, but sell it directly; 77.4% collect recyclable material from the streets, mainly recovering cardboard, paper, scrap, aluminium and *cachureos* (articles that are no longer used but have components that can potentially be repaired, reused or recycled. According to the same study, recyclers surveyed in the Commune of Santiago earn an average of 192,667 CLP per month (US$287) and 73.2% visualise themselves carrying out this same activity in the future.

Inclusive recycling challenges

The greatest challenge in the City of Santiago is to commence installation of the necessary infrastructure for a recycling system that covers the whole metropolitan area and to stimulate the development of communal recycling systems within the municipalities. Systems with drop off points for the disposal of recyclables exist in a small number of communes (Vitacura, Los Condes), with considerable coverage. Another small number of communes have low coverage recycling systems operated under pilot schemes. A greater number do not have any system at all for the collection of recyclables. Most recycling systems in operation are run by companies; as such, they are not always inclusive of recyclers.Hence, most of the work performed by grassroots recyclers is carried out informally. This presents a second challenge at the regional level: the formal organisation of recyclers, who, up to now, have worked individually or in families, and who will soon be affected by changes due to be made to recycling legislation. The Recycling Law (*Ley de Fomento al Reciclaje*) considers grassroots recyclers as recycling managers, thus recognising the role of recyclers and offering them an opportunity at the same time. If recyclers are to make the most of this opportunity, they should fulfil certain requirements such as labour certification, legal status, and sanitary permits, among others.

The most important challenges for inclusive recycling in the Commune of Santiago are the following. Firstly, it is necessary to increase the scale of the Municipal Inclusive Recycling Programme (*Programa de Reciclaje Inclusivo Municipal*), generating incentives to integrate the majority of recyclers who are working informally within the commune, independently of the Municipal Recycling Programme. A significant number of recyclers are yet to be attracted by this pilot programme, which suggests that they do not find the benefits worthwhile. Secondly, there needs to be better infrastructure and equipment for recycling within the commune. A project is to build a recycling centre of greater capacity is in place; this will improve the service and permit its expansion. Lastly, progress is needed to further formalise the Municipal Recycling Programme and its inclusive recycling component, reaching a greater degree of institutionalisation: tenders for inclusive recycling, calculation of service tariffs of informal recyclers, municipal decrees that regulate inclusive recycling among other instruments.

São Paulo, Brasil

City definition (unit of analysis):

São Paulo is the capital of the state of the same name, the most important state in Brazil as it houses the largest industrial park and its financial centre is the most dynamic in the country. The city is divided into 31 subdivisions or *sub-alcaldías*, which are grouped into nine zones.

SOURCE:
São Paulo City Government – Secretary of Public Services. http://www.prefeitura.sp.gov.br/cidade/secretarias/upload/servicos/arquivos/PGIRS-2014.pdf

Indicators	São Paulo, Brasil
Population, city[1]	12,308,378
GDP (PPP) per capita, city[1]	US$20,940
Percentage of the population below the poverty line (%), city[1]	42.2%
Minimum monthly wage (US$), national[2]	US$188
Gini coefficient, city[3]	0.55
National unemployment rate (%), national[4]	7.7%
Percentage of employment that is informal (%), national[4]	36.8%
Percentage of urban housing in deprived neighbourhoods (%), national[3]	22.3%

1 Canback
2 ILO and The Economist Intelligence Unit
3 UN Habitat and national sources
4 ILO
5 Brazilian Institute of Geography and Statistics, 2016

Brief description of the city's ISWM system

The management of solid waste is considered a public service in Brazil for which municipalities are responsible, while recycling processes are considered industrial activities. São Paulo has a selective waste collection service in which 93 recycler cooperatives participate in the 96 districts. The materials they collect are transferred to sorting plants, which have been linked to older independent recyclers, and the materials are later commercialised via intermediaries or industry. Ordinary waste is collected by two privately owned concessionaries, each of which service almost 2m homes. Solid waste is sent to transfer stations where it is loaded to be disposed of in two sanitary landfills located in the municipalities of São Mateus and Vizinho de Caeiras.

Multiple stakeholders participate in the management of solid waste, including: both independent and organised grassroots recyclers who are in charge of collecting sorted recyclable materials, which they either recover from mixed waste disposed of by citizens, or, they are linked to a waste separating plant; companies responsible for the collection, transportation and final disposal of non-recyclable waste; sellers of recyclable material (better known as intermediaries) who receive the separated materials and have at their disposition additional infrastructure for its weighing, packing, shredding, gathering and transportation; the industry that exploits recyclable materials and the State who defines the scheme and policies as well as collecting taxes.

Since 1989, solutions have been implemented for decreasing waste in sanitary landfill sites and reducing vulnerability among the recycler population. However, despite these efforts on behalf of the municipal government and recycler cooperatives, 95% of waste is still disposed at sanitary landfills owing to the lack of separation at source among users. The municipality has 22 registered recycler cooperatives; another 48 cooperatives provide support when there is an increased volume of recyclables. The waste collected by cooperatives is transported to Recycling Centres in which other organised

recyclers carry out the separation, sorting and packaging of the waste for sale to industry or intermediaries.

Brief description of grassroots recyclers

It is estimated that there are 10,000 recyclers in São Paulo, of which 1,100 are associated with an organisation registered with the Prefecture. In São Paulo there are no recycler organisations of a political nature. However, there are 22 registered recycler cooperatives (and another 48 unregistered) among which the COOPERE and COOPERCAPS (*Cooperativa de Trabalho e Produção da Capela do Socorro*) cooperatives stand out, whose associated recyclers work in São Paulo's mechanised recycling centres.

Recyclers working in organisations are involved in the collection, transportation, separation and sorting of materials. Those who work in collection carry out most of their activities on the streets, receiving sorted waste on a door-to-door basis, which they accumulate somewhere until a truck collects it later on. Most personnel carrying out this job have a uniform and in some cases gloves. However, they lack personal protective equipment and do not have restrooms nearby. Those involved in the work of sorting and separating do so in enclosed facilities equipped with conveyor belts on which waste is sorted. In contrast to recyclers involved in collection, they are not exposed to the climate or face vehicular risks and they have restrooms close by. Some of the cooperatives have baling equipment. Associations sell to industry and occasionally to intermediaries. Informal recyclers mainly collect waste from the roadside before selling it to intermediaries.

Regarding their social and economic situation, recyclers work long days of over eight hours for which they receive relatively low remuneration. According to the census, only 19% of those surveyed claimed to belong to a network, primarily marketing networks. In relation to equipment used for work, 53% possessed their own equipment while 39% lease or borrow a space. Only 8% of those surveyed had acquired any kind of funding in the 12 months preceding the survey.

Inclusive recycling challenges

In general, great advances have been made in Brazil towards integrating informal stakeholders into solid waste management systems. Specifically in São Paulo, the roles of and the interaction between users, recyclers and privately owned waste management companies have been perfected, due to 20 years of implementing selective collection routes with the participation of cooperatives. With regard to legislation and the adoption of technologies for the collection, transportation, separation, sorting and packaging processes, Brazil is currently one of the pioneer countries in inclusive recycling in Latin America, due to government support and private stakeholder alliances

However, 90% of the recycler population has not been included in formalisation programmes. They continue to carry out their activities in precarious conditions and are subject to the imposition of prices and quantities by informal middlemen. As such, it is necessary for the government to implement measures to improve existing information on cooperative affiliations and establish the appropriate incentives that will drive informal recyclers to form organisations. Additionally, users do not separate recyclable materials in a proper or continuous fashion. Therefore, the government must invest in waste separation campaigns and establish both incentives and sanctions if recyclers are to obtain a greater quantity and quality of recyclable materials.

Photograph: Matías Recart

VI. Methodology

Cities included in the study

On the basis of a combination of criteria, twelve (12) cities were selected for the study. The selection was balanced in terms of population size and GDP per capita, and included small, medium and large cities. Four of the cities also feature in the Inter-American Development Bank's (IDB) Emerging and Sustainable Cities Initiative (ESCI). The geographical/legal analysis unit was defined for each city and can be found in each city's profile. The cities chosen are but a reduced sample of those within the Latin American and Caribbean (LAC) region and as such, the study has limitations.

Cities analysed in the study

No.	City	Country
1	Asuncion*	Paraguay
2	Bogota	Colombia
3	Belize City*	Belize
4	City of Buenos Aires	Argentina
5	Mexico City	Mexico
6	Lima	Peru
7	Montevideo *	Uruguay
8	Quito	Ecuador
9	San Jose *	Costa Rica
10	Santa Cruz	Bolivia
11	Santiago (Commune)	Chile
12	São Paulo	Brazil

* City included in the ESCI.

Indicators and scoring

The evaluation framework consists of 10 qualitative indicators, with 37 sub-indicators (associated questions). At the same time, another 20 quantitative indicators were collected on the characteristics of the cities and waste management (see section "Quantitative Indicators" below). The qualitative indicators are classified into three broad categories: 1) regulatory, 2) organisational, 3) market.

1) REGULATIONS
1.1) Waste management regulations
1.2) Grassroots recycler integration
1.3) Generation of information
1.4) Public health and the environment
2) ORGANISATION
2.1) Associative practices
2.2) Business organisations
3) MARKET
3.1) Waste access and storage conditions
3.2) Conditions for marketing recyclable materials
3.3) Grassroots recycler income
3.4) Working conditions for grassroots recyclers

The indicator framework presented in this study reflects the idea of greater inclusion and measures the situation of inclusive recycling in the 12 cities of the region in relation to this ideal scenario. The objective of this study is not to serve as a framework for the integrated management of solid waste, but rather to focus specifically on the inclusion of informal recyclers.

The methodology of this study was created by The Economist Intelligence Unit research team in consultation with the Regional Initiative for Inclusive Recycling (IRR). The indicator framework has been created from numerous sources. Firstly, in 2013, the IRR published the results of an initial study and comparative analysis of the informal recycling sector in 15 countries within the LAC region (see Accenture 2013). In this initial evaluation, 17 qualitative and quantitative indicators were considered in three main categories: (1) regulations; (2) organisation, and (3) market dynamics. The framework is structured around these initial categories.

Secondly, various analytic approaches and frameworks were consulted in order to describe inclusive recycling and waste management, for example the work of Velis et al. (2012), UN-HABITAT (2010) and Wilson et al. (2015a, 2015b).

Lastly, the list of indicators and the focus of the research were presented to international and regional experts and professionals in a workshop in May 2016.

Scoring

Various sources were employed to evaluate the indicators, including secondary information (reports, articles published in the press) and primary sources (official databases, laws and regulations, interviews with experts). Ninety in-depth interviews were carried out with municipal authorities, recycling associations, recycling businesses, NGO representatives and specialists in the field. An average of eight interviews were carried out per city. The list of experts interviewed can be found in the Bibliography.

All qualitative indicators are scored on a whole number scale. The scale ranges from 0-1, 0-2 or 0-3, and the scores depend on the definitions and scoring method formulated for each indicator. A scoring guide was created for the researchers. Scores are assigned by The Economist Intelligence Unit research team according to the scoring criteria. Following this, the whole number scores are "normalised" or transformed into a score of between 0 and 100 to enable comparison.

Normalisation

The indicator scores are normalised and totalled in the different categories so that broader concepts can be compared between cities. Normalisation establishes a new base for the indicator scores and converts them into a common unit so that they may be totalled.

The indicators are normalised in two ways:

a) If the data already fall within the fixed range, for example, 0-100 or 0-4, they are transformed using the minimum and maximum values of the range. So, if the indicator falls within the range of 0-100, a raw data value of 0 will give a score of 0, and a raw data value of 100 will give a score of 100. If the indicator falls within the range of 0-4, a raw data value of 0 will give a score of 0, and a raw data value of 4 will give a score of 100.

b) If the data are taken from an economic or demographic (GDP, population, birth rates etc) dataset, the minimum and maximum values of the sample, or dataset of the cities we are analysing, is taken.

$$x = (x - \text{Min}(x)) / (\text{Max}(x) - \text{Min}(x))$$

Where Min(x) and Max(x) are, respectively, the minimum and maximum values in the 12 cities for any given indicator. Following this, the normalised values are transformed into a score of between 0 and 100 making it directly comparable to other indicators. This effectively means that the city with the highest value in raw data will have a score of 100, while a city with the lowest value will have a score of 0.

Weighting

Once scoring was complete and the indicators normalised, the EIU chose specific weights: indicators and sub-indicators were equally weighted. The user can adjust weightings to their liking in the Excel model (annexed) if they would rather specific indicators were given greater prominence in the scoring. At the same time, the user has the possibility of adding 10 more cities and their scores, as a tool for self-evaluation.

Equal weighting in indicators

For each category all indicators and sub-indicators receive equal weighting within their level. The following weights were used:

INDICATORS	Weight %
1) REGULATIONS	
1.1) Waste management regulations	25.0%
1.2) Grassroots recycler integration	25.0%
1.3) Generation of information	25.0%
1.4) Public health and the environment	25.0%
2) ORGANISATION	
2.1) Associative practices	50.0%
2.2) Commercial organisations	50.0%
3) MARKET	
3.1) Waste access and storage conditions	25.0%
3.2) Conditions for marketing recyclable materials	25.0%
3.3) Grassroots recycler income	25.0%
3.4) Working conditions for grassroots recyclers	25.0%

SUB-INDICATORS	Peso %
1) REGULATIONS	
1.1) Waste management regulations	
1.1.1) 1. Is there a national legal framework for waste management oriented to recycling that is inclusive of informal stakeholders?	25.0%
1.1.2) 2. Is there a municipal legal framework for waste management oriented to recycling that is inclusive of informal stakeholders?	25.0%
1.1.3) 3. Are municipal policies stable enough to guarantee continuity with regards to inclusive recycling policies?	25.0%
1.1.4) 4. Is there a municipal budget (or funding mechanism) allocated to inclusive recycling?	25.0%
1.2) Grassroots recycler integration	
1.2.1) 5. Is the occupation of grassroots recycler legally recognised?	12.5%
1.2.2) 6. Are grassroots recyclers recognised as waste management service providers?	12.5%
1.2.3) 7. Have grassroots recyclers been identified by way of a census?	12.5%
1.2.4) 8. To what degree is the tendering process within the recycling industry transparent and inclusive?	12.5%
1.2.5) 9. Were the municipal regulations/strategy regarding solid waste developed in a participatory way?	12.5%
1.2.6) 10. Do municipal level training programmes exist?	12.5%
1.2.7) 11. Do incentives, programmes and/or concrete actions exist for strengthening the occupation of grassroots recycler?	12.5%
1.2.8) 12. Are there recycling incentives for users?	12.5%
1.3) Generation of information	
1.3.1) 13. Is there a municipal system for collecting information on inclusive recycling?	50.0%
1.3.2) 14. Are there communication campaigns to encourage inclusive recycling within the municipality?	50.0%
1.4) Public health and the environment	
1.4.1) 15. Is the classification and management of special and/or hazardous waste and street classification sufficiently regulated and controlled?	100.0%
2) ORGANISATION	
2.1) Associative practices	
2.1.1) 16. How dynamic are the associations?	20.0%
2.1.2) 17. What level of inclusion do these associations present?	20.0%
2.1.3) 18. Do the associations participate in opportunities for interlocution or peer dialogue?	20.0%
2.1.4) 19. Are there opportunities for dialogue and coordination between the various stakeholders along the recycling value chain?	20.0%
2.1.5) 20. What is the level of representation of women in the associations?	20.0%
2.2) Commercial organisations	
2.2.1) 21. Are there commercial recycling organisations (cooperatives and/or microbusinesses) conducting business within the municipality?	33.3%
2.2.2) 22. What is the level of participation of the commercial recycling organisations along the recycling value chain?	33.3%

2.2.3) 23. Do commercial organisations of recyclers have access to funding?	33.3%
3) MARKET	
3.1) Waste access and storage conditions	
3.1.1) 24. How are recyclable materials accessed?	25.0%
3.1.2) 25. Do formal schemes for source-separated waste collection exist in the municipality that involve recyclers?	25.0%
3.1.3) 26. Do recyclers have access to installations where waste can be stored and classified?	25.0%
3.1.4) 27. What level of technical development is achieved by recycler groups in the classification (or pre-processing) of recyclable materials?	25.0%
3.2) Conditions for marketing recyclable materials	
3.2.1) 28. How does the value of the materials differ along the various stages of the recycling chain?	50.0%
3.2.2) 29. What is the level of development of the processing industry at the national level?	50.0%
3.3) Grassroots recycler income	
3.3.1) 30. Does the municipal waste management system permit the contracting of groups of grassroots recyclers?	25.0%
3.3.2) 31. Do fixed periodic payment mechanisms exist for grassroots recyclers for the services supplied?	25.0%
3.3.3) 32. Do diversification programmes exist for the services supplied by recyclers?	25.0%
3.3.4) 33. Average income of recyclers in relation to national minimum wage	25.0%
3.4) Working conditions for grassroots recyclers	
3.4.1) 34. Is there child labour in the waste management value chain?	25.0%
3.4.2) 35. To what extent is gender considered within labour conditions?	25.0%
3.4.3) 36. Are there inclusive plans for closing down open-air dumpsites?	25.0%
3.4.4) 37. Do recyclers have access to adequate work gear?	25.0%

List of qualitative indicators[11]

CATEGORY 1: REGULATIONS

1.1) Waste management regulations

1. Is there a national legal framework for waste management oriented to recycling that is inclusive of informal stakeholders?
Scoring:
0= There is no national legal framework, or there is a national legal Integrated Sustainable Waste Management (ISWM) framework but it takes neither recycling nor inclusion into account
1= There is an inclusive national legal framework, but it has not yet been implemented
2= There is an inclusive national legal framework and it has been implemented

2. Is there a municipal legal framework for waste management oriented to recycling that is inclusive of informal stakeholders?
Scoring:
0= There is no municipal legal framework, or there is a legal Integrated Sustainable Waste Management (ISWM) framework but it takes neither recycling nor inclusion into account
1= There is an inclusive legal framework, but it has not yet been implemented
2= There is an articulated inclusive legal framework and it has been implemented

3. Are municipal policies stable enough to guarantee continuity with regards to inclusive recycling policies?
Scoring:
0 = Low (1 period of administration) or there is no inclusive legal framework
1 = Medium (2 periods of continuous municipal administration)
2 = High (More than 2 periods of continuous municipal administration)

4. Is there a municipal budget (or funding mechanism) allocated to inclusive recycling?
Scoring:
0= There is no municipal budget (or funding mechanism), or there is an ISWM budget but it takes neither recycling nor inclusion into account
1= There is a municipal budget (or funding mechanism), but it has not yet been implemented
2= There is a municipal budget (or funding mechanism), and it has been implemented

11 The EIU has prepared a methodological scoring guide with the criteria for each question. This guide can be downloaded from the Excel model.

1.2) Grassroots recycler integration

5. Is the occupation of grassroots recycler legally recognised?
Scoring:
0= The occupation of grassroots recycler is not legally recognised
1= The occupation of grassroots recycler is legally recognised

6. Are grassroots recyclers recognised as waste management service providers?
Scoring:
0= Grassroots recyclers are not recognised as waste management service providers at municipal level
1= Grassroots recyclers are recognised, but linkage to the waste management system are not promoted
2= Grassroots recyclers are recognised as waste management service providers

7. Have grassroots recyclers been identified by way of a census?
Scoring:
0= A census of grassroots recyclers has not been carried out
1= A census of grassroots recyclers has been carried out

8. To what degree is the tendering process within the recycling industry transparent and inclusive?
Scoring:
0= There are no tendering processes for recycling or they exist with little transparency (0 criteria)
1= Tendering processes are of average transparency (1-2 criteria)
2= Tendering processes are highly transparent (the 3-4 criteria)

9. Were the municipal regulations/strategy regarding solid waste developed in a participatory way?
Scoring:
0= The process did not involve grassroots recyclers
1= It was a participatory process that involved grassroots recyclers
2= It was a participatory process and proposals were reflected in the regulations/strategy

10. Do municipal level training programmes exist?
Scoring:
0= There are no training programmes
1= There are training programmes for municipal staff or for users (citizens)
2= There are training programmes for municipal staff and/or grassroots recyclers
3= There are training programmes for all ISWM stakeholders (including private sector businesses, for example)

11. Do incentives, programmes and/or concrete actions exist for strengthening the occupation of grassroots recyclers?
Scoring:
0= There are no incentives, programmes and/or concrete actions
1= There are incentives, programmes and/or specific actions
2= There are incentives, programmes and/or systematic and institutionalised actions

12. Are there recycling incentives for users?
Scoring:
0=There are no recycling incentives for users
1= There are incentives but with low levels of participation
2= There are incentives with high levels of participation

1.3) Generation of information

13. Is there a municipal system for collecting information on inclusive recycling?
Scoring:
0= Yes to 0 or 1 questions
1= Yes to 2 or 3 questions
2= Yes to 4 or 5 questions

14. Are there communication campaigns to encourage inclusive recycling within the municipality?
Scoring:
0= No
1= Yes, but sporadically
2= Yes, continuously

1.4) Public health and the environment

15. Is the classification and management of special and/or hazardous waste and street classification sufficiently regulated and controlled?
Scoring:
0= There are no regulations
1= There are regulations but they are not applied
2= There are regulations and they are applied

CATEGORY 2: ORGANISATION

2.1) Associative practices

16. How active are the associations?
Scoring:
0= There are no associations or they are very difficult to create
1= There is at least one association, but the admission process is difficult
2= There is at least one association and it admits new members

17. What level of inclusion do these associations present?
Scoring:
0= Low levels of inclusion (0 or 1 criteria)
1= Medium levels of inclusion (2 or 3 criteria)
2= High levels of inclusion (4 or more criteria)

18. Do the associations participate in opportunities for interlocution or peer dialogue?
Scoring:
0= They do not participate
1= They participate at municipal and/or national level
2= They participate at municipal, national and international level

19. Are there opportunities for dialogue and coordination between the various stakeholders along the recycling value chain?
Scoring:
0= There are no opportunities for coordination
1= There are opportunities at national or municipal level
2= There are opportunities at national and municipal level

20. To what degree are women represented in the associations?
Scoring:
0= Low level representation (no criteria)
1= Medium level representation (1-2 criteria)
2= High level representation (3 or more criteria)

21. Are there commercial recycling organisations (cooperatives and/or microbusinesses) conducting business within the municipality?
Scoring:
0= No
1= Yes
2= Yes, and they operate in coordination and conjunction with each other

22. What is the level of participation of commercial recycling organisations in the recycling value chain?
Scoring:
0= Low (no criteria) or there are no such organisations
1= Medium (1 or 2 criteria)
2= High (3 or 4 criteria)

2.2) Business organisations

23. Do commercial organisations of recyclers have access to funding?
Scoring:
0= They do not have access or these organisations do not exist
1= Microcredit
2= Traditional or public bank
3= Support programmes from suppliers

CATEGORY 3: MARKET

3.1) Waste access and storage conditions

24. How are recyclable materials accessed?
Scoring:
0= Complete ban
1= Informal (dumpsite or street)
2= Collected at source
3= Municipal contracts for the provision of services

25. Do formal schemes for source-separated waste collection exist in the municipality that involve recyclers?
Scoring:
0= There is no source-separated waste collection
1= There is source-separated waste collection but it does not involve grassroots recyclers
2= There is source-separated waste collection and it involves grassroots recyclers

26. Do recyclers have access to installations where waste can be stored and classified?
Scoring:
0= No, or recyclers do not participate in these processes
1= Yes

27. What level of technical development is achieved by recycler groups in the classification (or pre-processing) of recyclable materials?
Scoring:
0= Low, or recyclers do not participate in these processes
1= Medium
2= High

3.2) Conditions for marketing recyclable materials

28. How does the value of the materials differ throughout the various stages of the recycling chain?
Scoring:
Ratio of the purchase value of one unit (1 kg) of PET, paper, cardboard or aluminium in collection/ sorting centres / purchase value of the same unit in a pre-processing establishment*.

29. What is the level of development of the processing industry at the national level?
Scoring:
0= There are no industrial sorting facilities in the country
1= There are industrial sorting facilities for 1 or 2 materials
2= There are industrial sorting facilities for 3 materials
3= There are industrial sorting facilities for all materials

3.3) Grassroots recycler income

30. Does the municipal waste management system permit the contracting of groups of grassroots recyclers?
Scoring:
0= No
1= It is permitted but does not happen
2= Yes, and this is evidenced in the contracts assigned to existing recycling organisations

31. Do fixed periodic payment mechanisms exist for grassroots recyclers for the services supplied?
Scoring:
0= No
1= Yes

32. Are there any programmes in place to diversify the services provided by recyclers?
Scoring:
0= No
1= Yes

33. Average income of recyclers in relation to national minimum wage
Scoring:
% between average income / national minimum wage

3.4) Working conditions for grassroots recyclers

34. Is there child labour the waste management value chain?
Scoring:
0= Yes
1= Yes, but there are programmes in place to deal with the situation
2= No

35. To what extent is gender taken into account within labour conditions?
Scoring:
0 = Low (0 criteria)
1 = Medium (1-2)
2= High (3 or more)

36. Are there inclusive plans for closing down open-air dumpsites?
Scoring:
0= No
1= Yes, or there are no open-air dumpsites

37. Do recyclers have access to adequate work gear?
Scoring:
0= No criteria were met.
1= 1 to 3 criteria were met.
2= 4 or more criteria were met

List of quantitative indicators

A series of quantitative data available in official sources or existing reports were collected. These indicators are found in the interactive Excel model accompanying this study:

1. Number of grassroots recyclers in the municipality
2. Number of grassroots recycler associations of a political nature
3. Number of grassroots recycler associations of an economic nature
4. Number of grassroots recycler organisations contracted by the municipal waste management system
5. Annual generation of solid waste
6. Percentage of the city population receiving regular municipal solid waste collection
7. Percentage of the city population covered by a source-separated municipal solid waste collection service
8. Number of sanitary landfills
9. Percentage of the city's municipal solid waste disposed of in sanitary landfills
10. Remaining lifespan of sanitary landfill site
11. Percentage of the city's solid waste that is burned or disposed of in open-air dumps, controlled landfills and bodies of water
12. Percentage of the city's solid waste that is composted
13. Percentage of the city's municipal solid waste that is separated and sorted for recycling
14. Percentage of the city's municipal solid waste that is used as an energy resource
15. Percentage of municipal solid waste that is recycled

City profile indicators

The city profiles contain graphics with demographic and socio-economic data. This information was compiled using the same sources for each indicator in order to achieve greater comparability. The definitions, sources and years can be found in the following table:

Indicator	Unit	Geographical level	Source	Year	Definition
Population	Number of people	City	EIU Canback calculation https://www.cgidd.com	2016	Number of people inhabiting the geographic unit.
GDP (PPP) per capita (US$)	2005 Constant dollars in terms of purchasing power parity (PPP) per capita (US$)	City (except Belize City which is at national level)	EIU Canback calculation https://www.cgidd.com	2016	Calculated using constant dollars from 2005 in terms of purchasing power parity Percentage of the population in (PPP) divided by the population of the city.
Percentage of the population below the poverty line	Percentage (%)	City (except Belize City which is at national level)	EIU Canback calculation https://www.cgidd.com/socioeconomic_definition.pdf?_ga=1.132105734.820260841.1469718687	2016	Percentage of the population in Class D and E, defined as those people who form part of homes earning less than 6,799.00 international dollars per year (less than US$4.66 per day per member of a four person family). Class D (working class) is defined as those earning a minimum of $2,700.00 per year and a maximum of $6,799.00 per year. Class E (under-class) is defined as those earning a minimum of $0.00 per year and a maximum of $2,699.00 per year.
Monthly minimum wage (US$)	Current dollars (US$)	National	ILO http://www.ilo.org/ilostat	Last year available	Minimum legal monthly wage; without considering other mandatory legal benefits. Taken from the ILO in local currency and converted to current dollars using the EIU average nominal exchange rate.
Gini coefficient	Coefficient (0-1)	City	UN Habitat and national sources http://unhabitat.org/wp-content/uploads/2014/03/Table-3.1-Gini-Coefficient-for-Selected-Cities-and-Provinces.pdf	Last year available	The Gini coefficient is a number between 0 and 1, where 0 expresses perfect income equality and 1 expresses maximal inequality.
Unemployment rate	Percentage (%)	National	ILO http://www.ilo.org/ilostat	2016	Percentage of the population that is economically active, over 15 years old and that has unsuccessfully sought work in the last four weeks.

Indicator	Unit	Geographical level	Source	Year	Definition
Informal employment	Percentage (%)	National	ILO http://www.ilo.org/ilostat	Last year available	Informal employment rate divided by total employment rate Informal employment includes those whose main or secondary jobs entail the production of goods for their own final use at home (for example, subsistence agriculture or building own home). The informal nature of their jobs is due to the fact that family workers do not usually have explicit written employment contracts and their jobs are not generally subject to labour legislation, social security regulations, collective agreements etc. Employment is considered informal when it is not legally or practically subject to national labour market legislation, income taxes, social care or certain work-related benefits (annual leave, or sick pay).
Percentage of urban housing in deprived neighbourhoods	Percentage (%)	National	UN Habitat http://unhabitat.org/wp-content/uploads/2014/03/Table-2.3-Proportion-of-urban-population-living-in-slums-and-urban-slum-population-by-country-1990-2014.pdf	2014	Proportion of urban housing found in deprived neighbourhoods. Calculated on the basis of national housing data using the four components of deprived neighbourhoods: lack of access to drinking water, acceptable sanitation standards, durable housing and sufficient living space.

Glossary[12]

Community container: A receptacle to contain waste, usually larger than 1 m^3 and used for more than one household.

Composition (or characterisation): Quantitative description of the materials that are found within a particular waste stream, in the form of a list of materials and their absolute quantities per day or per year, or as a percentage of total materials.

Composting: The decomposition of materials from living organisms under controlled conditions and in the presence of oxygen.

Construction waste: Waste resulting from the construction or demolition of houses, offices, dams, industrial plants, schools and other structures (normally made of recycled wood, different pieces of metal, packing materials, boxes, wire, metal plates, surplus concrete and/or broken bricks), of a different nature to domestic or municipal mixed waste, thus requiring different treatment.

Contracting of services: Process usually carried out through a tender in which the municipality awards a company (for at least the length of time it takes to recuperate their initial investment), the exclusive rights to the planning and provision of some or all stages of waste management services. The services contract may also include billing and collecting direct payment from users, as well as financing of investments.

Controlled dumpsite/landfill: Site at which solid waste is finally disposed of, without the infrastructure of a sanitary landfill, although it does have some control measures.

Cooperative: An enterprise organised as a cooperative with multiple owners who participate in activities. In some Latin American countries, cooperatives have a special tax status and as such they are a favoured form of establishing a business.

Distributor (or middleman): Business or individual that buys quantified (weighed or measured) waste for recycling or composting, storage, renewing or processing for subsequent re-sale in the recycling value chain. A distributor usually has his or her proprietary facilities and some kind of dedicated storage space.

Fee: The amount to be paid for the unit of the service provided, which is established based on the cost of the unit with or without municipal subsidies.

Final disposal: Act of disposing of, or permanently containing, a diverse range of waste from sites and facilities.

Formal recycling: Recycling process carried out directly by the body in charge of the municipal urban cleansing service and/or by a business/institution authorised by the authorities responsible for waste management.

Formal sector for the management of solid waste: Solid waste management activities planned, financed, carried out, regulated and/or recognised by the formal local authorities or their agents, usually by way of contracts, licenses or concessions.

Grassroots recycler: A worker, though seldom recognised as such, who recovers materials from the waste stream. Other terms used in the region include: *ciruja, recuperador, cartonero* and *excavador* (Argentina); *catador* and *chepeiro* (Brazil); *cartonero, cachurero, chatarrero* and *recolector* (Chile); *basuriego, costalero, zorrego, botellero* (Colombia); *buzo* (Costa Rica, Cuba, Honduras and Dominican Republic); *minador* and *chambero* (Ecuador); *pepenador* (El Salvador, Mexico); *guajero* and *pepenador* (Guatemala); *pepenador* and *churequero* (Nicaragua); *metalero* and *pepenador* (Panama); *ganchero* and *pepenador* (Paraguay); *segregador* and *cachinero* (Peru); *hurgador* and *clasificador* (Uruguay); *excavador* and *zamuro* (Venezuela). In English the following terms are used: "*recycler*," "*scavenger*", "*reclaimer*", "*rag picker*", "*canner*", "*informal resource recoverer*", "*binner*", "*recycler*", "*poacher*" and "*salvager*". "*Chiffonier*" is the common French term.

Hazardous waste: A material that poses substantial or potential threats to public health or the environment and generally exhibits one or more of these characteristics: ignitable, oxidant, corrosive, radioactive, explosive, toxic, carcinogenic, pathogenic.

Inclusive recycling: Waste management systems that prioritise recovery and recycling, recognising and formalising the role of recyclers as key stakeholders in said systems. These systems are built using regulations and public policies, initiatives, programmes and actions in the public and private sector. Inclusive recycling represents a new paradigm in the sustainable management of solid waste which incorporates the concept of the three environmental "Rs" (Reduce, Reuse and Recycle), as well as 3 socio-economic factors: (i) source-separated waste collection, (ii) Recognition of the role of recyclers and (iii) Remuneration of the service provided.

12 Terms taken from the following sources: PAHO, AIDIS and IDB (2010); OSHA (2004); UN Habitat and IDB/IRR (2013)

Informal recycling: The recovery, segregation, cleaning, transportation, transformation and/or sale of recyclable materials in the solid waste stream, carried out informally, usually by excluded social stakeholders of a low social class.

Integrated Sustainable Waste Management (ISWM) a systems approach to waste management that recognises three important dimensions of waste management: (1) stakeholders; (2) waste system elements; and (3) aspects of sustainability.

Micro and small enterprise (MSEs): Small businesses, smaller then SMEs, which usually employ fewer than ten people.

Municipality (or local government, town hall, city, town, municipality): Unit of local government with its own level of governance, responsibility and representation; combines elected and appointed officials.

Open air dumpsite (or garbage dump): Site at which waste is openly disposed of in an uncontrolled manner, without any kind of sanitary treatment.

Organic waste: The decomposable fraction of domestic and commercial waste, includes kitchen and garden waste, sometimes includes products of animal origin.

Personal Protective Equipment (PPEs): Equipment used to minimise exposure to a variety of risks. Examples of PPEs include articles such as gloves, protective eyewear and footwear, hearing protection devices (earplugs, earmuffs) hardhats, protective masks, and overalls.

Pre-processing: Preparing recoverable materials from the waste stream to be used for subsequent processing without adding significant value to them.

Processing (Beneficiation, upgrading): Manual or mechanical operations to preserve or re-introduce value-added into materials. Usually involves compacting, size reduction, sorting, and packaging or transport.

Recyclable materials: Materials, which owing to their physical properties, can be reused or transformed into new products, having served their original purpose.

Recyclers Organisations

Recycler organisations can take various forms:

- *Informal group*. Recyclers can have meetings, recognised leaders etc, without being legally established, or they are in the process of formalising.
- *Formal association*. The constitution of a formal legal entity with a name, status, defined organisational structure, elected officials, membership fees etc, structured in various ways (the specificities of which can be developed through workshops, and training sessions where recyclers are informed, interact, and choose between various options). The association can be legally recognised, though of a yet undefined nature, making a more precise classification difficult.
- *Cooperative*. A cooperative entails a collective way of working, with shared management and benefits, and a focus on work organisation. It can be particularly useful when sorting activities are done collectively, such as the mechanical/conveyor belt sorting model.
- *Sales cooperative*. An alternative to the complete collectivisation of the work of recyclers, this arrangement permits the aggregation and sale of recovered recyclable materials, while maintaining the independence of recyclers with regard to recovery. Such solutions could help recyclers access better buyers groups (since a collective has greater ability to contact, attract and negotiate with new buyers), increasing profit margins as a result. Charging membership fees allows for the legal purchase of new equipment over time. The risk of this option is that it requires sound organisation and transparency to avoid misunderstandings and conflicts, since recyclers would give over their materials to a subgroup of elected individuals in exchange for a receipt and each recycler would pay their share of the materials for sale. All registers would have to be publicly reviewed to ensure transparency and credibility, and additional control methods introduced if necessary.
- *Association/trade union*. Association with an emphasis on the achievement, maintenance or defence of workers' rights. Their utility largely depends on the national legal framework and the comparative benefits it offers.
- *SMEs*. Small companies with non-cooperative working and payment methods, whether in the waste and recycling industry or in other sectors. Such agreements require the careful study of capability and demand as well as strong support and monitoring during an adequate time period.

Recycling rate (recovery rate, percentage recycled, diversion rate): Percentage relationship between the quantity of recovered materials that are recycled, composted or of recovered energy, and the total amount of waste generated.

Recycling: Activity by which certain solid waste received from urban cleansing services is separated, recovered, sorted and processed to be reintroduced into the domestic, commercial or industrial cycle either formally or informally.

Reuse: Use of waste materials or discarded products in the same form without significant transformation

Sanitary landfill: An engineered method of containing municipal solid wastes where they are dispersed, accommodated and compacted over a waterproof layer, and covered with soil or another inert material at least once a day, to control the proliferation of vectors and the adequate management of gases and leachate, to avoid contaminating the environment and to protect human health. The sanitary landfill has gate control and a weigh-bridge and informal recyclers are usually excluded from the site.

Sanitation: Urban environmental activities including waste water and solid waste management.

Source separated collection: (or collection of recyclable material): Collection of specific types of materials at a designated time, in a different container or vehicle, or in another way so as to maintain the separation potential and maximise the recovery.

Separation or sorting at source (Separation or segregation at source): Actions taken to keep and store certain materials separately from commingled (mixed) waste at the point of generation.

Solid household waste: Solid or semisolid waste of exclusively residential origin, generated by human activity in the home.

Solid urban or municipal waste: Solid or semisolid waste produced by urban populations in general, including household waste as well as that produced by commercial activity, the service industry, institutions, markets, common or non-hazardous hospital waste, waste generated by industry offices, street sweeping and cleaning, public spaces, and the pruning of trees and plants in the streets, plazas and public gardens.

Sorting (or separation): Separating mixed materials into single-material components, mechanically or manually, either at the source or after the collection process.

Special waste: Waste generated from the productive processes that do not meet the characteristics of hazardous or solid urban waste, or that are produced by large generators of urban solid waste. They include non-hazardous sludge, voluminous or heavy waste (furniture, mattresses, household appliances, abandoned cars, concrete, asphalt, tires etc).

Transfer station: Set of equipment and facilities, ranging from loading and collection vehicles through heavy carrier vehicles used to transfer and occasionally compact waste prior to being transported to final disposal sites.

Transfer: The movement of waste from its first point of discharge to final disposal; it usually includes some very basic processing: compaction, pre-sorting or size reduction.

Treatment: Labour based or mechanical methods to reduce the risk of exposure or reduce the impact to the environment of toxic or hazardous materials associated with the waste stream and in some cases, concurrently captures and increases the economic value of specific waste components to a value added stream.

Valorisation (or recycling, recovery): The entire process of extracting, storing, collecting or processing materials from the waste stream in order to extract value and divert the material to a value added stream.

Waste generation: The source of the waste, that is, the first point it is discarded as a useful object and is redefined by its owner as waste.

Waste reduction (or waste minimisation): Strategies or activities carried out by people, companies or institutions to reduce the volume and toxicity of the discarded material.

Bibliography

General

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