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## Solid Waste Management and Social Inclusion of Waste Pickers: Opportunities and Challenges

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Somewhere between 500,000 and 4 million people scavenge through trash for a living in Latin America. Most are poor, socially marginalized and politically disenfranchised. Recently, however, waste pickers have organized collectively and pressed municipalities to respect their rights and to meet their basic needs. Where sorting through trash was once condemned and even illegal, it is now more commonly seen as useful in a green trend toward building sustainable cities. In fact, many cities have employed waste pickers to extend household collection and to promote recycling. Cooperation between waste pickers and municipalities offers the hope of achieving better waste management as well as the ‘social inclusion’ of these marginalized citizens.

In this paper we explore the opportunities and challenges inherent in the model of cooperation between municipal solid waste systems (MWSs) and waste picker cooperatives (WPCs). There is growing enthusiasm about waste picker inclusion, often as part of ‘integrated solid waste management.’ The World Bank and the InterAmerican Development Bank, for example, have both funded projects to support waste picker integration into formal sector recycling. Advocacy organizations such as WIEGO have called for an intensification of such efforts through access to credit and technology, as well as through partnerships to collect recyclables in underserved communities. These measures have given many waste pickers higher standards of living, economic security and a sense of inclusion in society.

Yet closer inspection reveals problems that emerge as cities move up an envisioned process of inclusion from supporting independent, informal wastepicking to subcontracting municipal services to competitive waste picker cooperatives. Among the poorest recyclers, a lack of waste picker skills limits what can be accomplished without a significant effort to address a broader set of poverty-related needs. In wealthier cities, where waste picker cooperatives have sophisticated business operations, inclusion becomes less ‘inclusive’ as mechanized processing generate too few jobs to accommodate the vast numbers of waste pickers. While integration of waste pickers into formal sector

systems is hardly quixotic and in fact yields real benefits for many people, inclusion faces significant hurdles in providing most waste pickers with sustainable livelihoods. At its worst, ‘inclusion’ can be no more than tokenism in a process of dump closure and waste picker displacement. To truly address the needs of waste pickers, waste management modernization must be coupled with broader social policies.

Using three cases (Luz del Futuro in Bluefields, Nicaragua, the recycling cooperatives in the outskirts of São Paulo, Brazil, and the process of biofuel conversion at Mexico City’s Bordo Poniente dump), we identify opportunities and challenges presented by inclusion of waste pickers at each stage of development.

## **I. The Evolution of Waste Picker Cooperatives and Municipal Inclusion Initiatives**

### *A. Who are waste pickers?*

The terms “waste pickers,” “waste collectors” and “recyclers” refer to people who make a living by selling recyclables found in trash. They are found in the city streets, in the dumps and on the municipal trucks that collect and transport waste to disposal locations (Wilson, Velis and Cheeseman 2006) (Scheinberg et al. 2011). The different names for waste collectors in Latin America are not only witness to the size of the phenomenon but to the diversity of specializations within this trade: *cartoneros*, *buscabotes* and *pepenadores* in Mexico, *churequeros* in Nicaragua, *basurriegos*, *cartoneros*, *traperos* and *chatarreros* in Colombia, *chamberos* in Ecuador, *catadores* in Brazil, *buzos* in Costa Rica, *cirujas* in Argentina and others like *recuperadores*, *recicladores*, *clasificadores*, *minaderos* and *gancheros* (Wilson, Velis and Cheeseman 2006, Fergutz 2011). Even among those who work within the dumps, differential access to valuable materials can reflect a finely structured class hierarchy. Moreover, the composition and resale value of waste varies across communities according to local household income. Thus generalization about policies to meet the heterogeneous needs of waste pickers warrants caution.

Although some waste pickers work alone, the field is dominated by family and micro-enterprises comprised of women, children and elderly relatives (Wilson, Velis and Cheeseman 2006) (WIEGO 2012b). The appeal of wastepicking comes from low barriers to entry and decent profit margins: waste is easy to access and it has value. As Latin Americans use more disposable bottles and packaging, this occupation offers growing opportunities. Easy access to marketable materials and food scraps has attracted immigrants, abandoned women, minorities and uneducated Latin Americans (Wilson, Velis and Cheeseman 2006). For some this role is temporary, particularly during recessions; for others, it is a well-established, reasonably secure profession.

The fluid nature of the profession makes it difficult to design programs that target the most disadvantaged waste pickers. Fragmentation and hierarchies within the waste picker community can define who participates and benefits from policies. Many waste pickers are already members of unions or cooperatives and others are privileged collectors of valuable metals. The least employable and independent waste pickers are not necessarily those who benefit from partnerships with municipal waste programs. As

we discuss later, evaluation of programs to promote waste picker inclusion sector mainly hinges on *how many* waste pickers find jobs in in the formal municipal waste system. Without a clearer sense of the target population, it is hard to assess whether a program serves a substantial share of the population.

### *B. Hurdles presented by informality and discrimination*

Although waste picking is an entrepreneurial activity, it is not a prosperous one. In the poorest countries like Nicaragua, waste pickers are said to earn between \$1.50 and \$2 per day (just below the World Bank's poverty line), while in Mexico, waste pickers are said to average more than \$7 per day, or about \$2500 per year. Even if many waste pickers are not poor by income-based official benchmarks, they experience hardships in multiple dimensions of well-being. The job itself is strenuous and risky, exposing workers to pathogens, fallen debris and rabid animals. Scheinberg (2011) describes the working conditions of many waste pickers:

*“They face injuries from dogs, rats, and other vectors, combined with chemical and biological health risks due to contact with toxic substances, health care wastes, fecal matter, body parts, used syringes and other materials in the waste stream. In the best of situations, pickers report ergonomic problems due to the physically taxing nature of the work, and psychological and social disadvantages stemming from their low social status” (p. 49).*

As informal workers, waste pickers are largely denied access to social benefits such as health insurance, pensions and unemployment insurance. Physical debilitation, lack of education to accurately assess risks, emotional disabilities and income imperatives prevent workers from protecting themselves. In fact, one study of waste pickers in Mexico City estimated their life expectancy to be just 39 years, compared to 67 years among city residents overall (Wilson et al, 2006). This is also one of the last sectors in Latin America in which child labor is pervasive (Ensing 2011, WIEGO 2012c).

Waste pickers rarely achieve economic mobility through this profession. Although equipment could significantly raise productivity, waste picker methods are labor-intensive due to a lack of access to credit (CWG; GIZ 2011). An absence of economies of scale in turn contributes to weak bargaining power in the recycling supply chain. Waste pickers complain that middlemen pay them far less than they pay formal businesses for the same type of goods, perhaps as little as 10% (Oscar Fergutz 2011). In some places, collusion between intermediaries leaves waste pickers with few outlets for their goods.

The formal waste management community also does not support scaling up by waste pickers, who are viewed as competitors for jobs and recyclable resources (CWG; GIZ 2011). Municipal workers shun waste pickers as informal workers because they skirt the rules, taxes and other costs. Thus they are denied access to the waste stream and to social services (Scheinberg, Spies, et al. 2011). Poverty results from the inefficient way in which waste pickers process waste as well as the limitations that arise from their social position.

### C. The rise of waste picker cooperatives

If waste picking as a profession is old, the idea of uniting into cooperatives is fairly new. Waste picker cooperatives began to develop at the end of the 20th century, emboldened by democratization and human rights movements (WIEGO 2012b). The oldest associations in the region include the *Colombian Asociación de Recicladores de Bogota* (ARB) and the *Brazilian Movimento Nacional dos Catadores de Materiais Recicláveis* (MNCR), both established by the early 1990s.<sup>1</sup> Other countries such as Argentina and Uruguay followed (WIEGO 2009), and most countries now have active cooperatives.

International networks among cooperatives have also emerged. In 2005, waste pickers met in Brazil to form the Latin American Waste Pickers Network (LAWPN). Its mission consists of raising awareness of the social, economic and environmental contributions of waste pickers, advocating for waste picker-inclusive policies, strengthening waste pickers' organizations and sharing technology (WIEGO 2009). Other global entities work toward the same mission, such as Women in the Informal Employment Globalizing and Organizing (WIEGO), Global Alliance for Incineration Alternatives (GAIA), the Avina Foundation, Inclusive Cities, Ciudad Saludable, and the Collaborative Working Group on Solid Waste Management (ILO, *From Waste to Green Jobs*, 2010).

As organized social movements, waste pickers have negotiated changes to laws to recognize waste pickers as workers with labor rights. Through protests, strikes and dump blockades, cooperatives have secured political enfranchisement, decriminalization and social security benefits such as pensions and health care. Recent laws provide legal access to waste, either as permission to gather street waste or, more generously, as rights to specific components in the municipal waste stream (WIEGO 2009).

The reversal of fortune afforded by cooperativization is striking. In the 1980s, an era in which Colombian paramilitary groups murdered waste pickers for the purposes of social cleansing and the sale of body organs, the closure of an open dump in Manizales inspired a waste picker cooperative to political activism. Today there are more than 100 waste picker collectives in Colombia, many of which participate in the *Asociación de Recicladores de Bogota* (ARB), the region's oldest umbrella network of some 9,000 waste pickers (Medina, 2008). The city of Bogota now allocates collection routes to ARB and directs recyclables to a sorting facility run by waste pickers.

Similarly, until 2002, the Argentine government forbade wastepicking under Municipal Ordinance 33.581, a decree of the dictatorship that reserved waste collection rights to private firms created by the junta (le Goff 2011). In 2002, as thousands of workers displaced by the financial crisis turned to wastepicking, the government created an agency dedicated to *cartoneros*. By 2008, its budget had grown to \$30 million per year (GAIA 2012). In 2013, Buenos Aires' municipal government signed an agreement with

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<sup>1</sup>Although Mexico has had a politically powerful hierarchy within its dumps at least since the 1960s, this did not take the form of a cooperative, in which members exercise voice and aim to improve the livelihoods of all members.

waste picker cooperatives to take responsibility for the city's recycling. The city also provides support in the form of daycare, uniforms, a warehouse, workplace insurance and social security. Likewise, after decades of waste picker struggle in Brazil, President Lula da Silva implemented laws to finance cooperatives and to provide low-income housing and education for many families (WIEGO 2012b).

The main advantage of cooperativization has been an increase in productivity. By working together, waste pickers gain advantages such as access to equipment and storage space, increased bargaining power with middlemen, and effective lobbying of municipalities for access to trash (WIEGO 2012b). Cooperatives also use technologies that reduce transaction costs, improve quality and raise prices (Zeuli and Cropp n.d.). Cooperatives not only achieve economies of scale by selling materials in bulk for better prices, but they reduce risk by diversifying the range of recyclables sold, such as various types of plastics, metals and paperboard. Cooperatives can also mitigate individual setbacks by providing more job security and a stable social network (FAO 2012).

Despite the advantages of cooperativization, the task of organizing workers into cooperatives is slow and challenging, and is itself now a policy aim in municipalities pursuing waste picker inclusion (WIEGO 2012b). Common obstacles concern internal democracy and organizational management (WIEGO 2012c). Young cooperatives face leadership crises, free-rider problems, transparency disputes, and a lack of basic business management skills (FAO 2008). As members, waste pickers are often unable to resolve problems on their own, whether these involve bookkeeping, negotiation with buyers or the use of electronic machinery (WIEGO 2012c). Internal limitations along the tortuous path to a sustainable organization can affect the success of inclusive partnerships with municipal systems.

Once established, a significant obstacle to growth is a lack of financial resources to expand the business by adding value to the materials gathered (WIEGO 2012c). The scrap industry favors suppliers with the capability to deliver, on a regular basis, adequate volumes of clean, pressed and bundled materials (Fergutz, 2008). Adding value, known as 'valorization,' comes from collecting, washing, sorting and re-selling materials. To process large volumes, mechanization is needed in the form of shredders, compactors, conveyor belts, scales and collection vehicles. Often not only is machinery lacking, but so is adequate warehouse space (WIEGO 2012b).

Cooperativization has opened doors to credit by advocating for access to credentials as registered businesses with the right to apply for loans (AVINA 2008, Zeuli and Cropp n.d.). The absence of a regulatory framework to recognize cooperatives as entities that can assume legal and institutional commitments – despite the informality of their workforce – is a significant barrier to raising productivity (IBD, AIDIS, PAHO 2010). Brazil and Colombia were early in providing legal recognition to their comparatively strong waste picker organizations; Chile granted legal status to its *Movimiento Nacional de Recicladores de Chile* in 2010 (Avina 2010). Ecuador's Ministry of Economic and Social Inclusion only agreed to 'move forward' in 2014 to seek legal recognition for wastepicking as a profession. Even with the right to register, most cooperatives need outside support to navigate the legal and financial system.

Cooperativization has facilitated cooperation with municipalities, which can raise waste picker incomes by providing access to more waste. At the same time, however, the waste modernization process threatens to undermine this progress. As landfills close and waste systems are mechanized, even efficient cooperatives struggle to survive without inclusion in the formal MSW system. The tension between policies of inclusion and modernization are discussed below.

## **II. Environmental Trends and Modernization in Municipal Solid Waste Management.**

Latin America faces growing challenges in managing its waste. The region generates about 400,000 tons of solid waste per day, about two-thirds of which comes from households and is therefore a public responsibility. With rising incomes, the future burden of waste will increase. Per capita waste generation is now 1.1 kg per day, or half the average generated by OECD residents. The World Bank estimates that by 2025, Latin American residents will create 1.6 kg of trash per capita per day, and overall tonnages will increase by more than sixty percent (Hoornweg and Bhada-Tata, 2012).

Municipal collection of trash is now the norm in Argentina, Brazil, Chile, Colombia, Uruguay and Venezuela, as most households have some type of collection at least once per week (IDB and PAHO, 2010). Although litter is prevalent, outright dumping of trash is not. However, compared with other regions, Latin America has relatively low rates of ‘waste diversion,’ i.e., recycling and composting ([www.worldmap.com](http://www.worldmap.com), map 308). The predominant means of disposal is through city dumps, with associated health and environmental problems. Most trash – around 60 percent of the waste generated in the region – ends up in inadequately controlled landfills (‘dumps’) with little compacting, covering or leachate control (Hoornweg and Bhada-Tata, 2012).<sup>2</sup> These dumps pose a hazard to local residents, in the form of diseases, pests, water contamination and air pollution. In addition, the release of methane from decomposing trash comprises a significant share of Latin America’s greenhouse gas emissions.

Recycling offers a way to divert waste from ill-equipped dumps. Until recently, the primary aim of municipal solid waste systems has been to protect public health through waste collection, with less attention to the disposal method (Marshall and Farahbakhsh 2013). Recycling rates are very low in the formal waste sector (see Table 1), in part because it faces high labor costs which factor heavily into the sorting and processing of scrap. Despite other disadvantages of operating in the informal sector, waste pickers recycle much more material than the formal waste management sector (Wilson, et al. 2012, Scheinberg et al. 2011, CWG; GIZ 2011).

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<sup>2</sup> Recycling and sorting is typically not part of the formal sector facilities except in major cities. To use Mexico as an example, 93% of communities provided waste collection services in 2010. However, of the 2456 municipalities and townships in the country, only 140 (6%) sent waste to any type of treatment facility for compaction or resale. Nearly all waste in Mexico City receives some type of processing, while in the poorer south, most waste is sent to dumps without compaction or processing. (<http://www.sustenta.org.mx/>)

City	Country	% recovered by formal sector	% recovered by informal sector	% recovered overall	% informal/total
Belo Horizonte	Brazil	0.5	1	1.5	67
Canete	Peru	1	11	12	92
Managua	Nicaragua	3	16	19	84

Adapted from Figure 6 and table 6 of Wilson, et al. 2012.

Collaboration between the formal and the informal sector seems desirable but instead two trends are prevalent: privatization and modernization of the waste sector. Each often implies the other, and both pose threats to the viability of waste pickers, whether or not they work in cooperatives. Privatization adds new large competitors to the waste sector and transfers *de facto* rights to waste resources from a public to a private domain (WIEGO 2012a). Because large private corporations tend to use technology-intensive systems, they limit access to waste by compacting it in transport and incinerating or burying it for disposal (WIEGO 2012a). Commercial recyclers also gather the most valuable recyclable waste, such as aluminum or concentrated sources of PETE, leaving lower-value scattered litter to waste pickers (WIEGO 2012b).

A disadvantage of such technological progress is that in reducing formal sector labor costs, “expensive technologies create reverse institutional and systemic linkages that drive out the informal sector in order to pay for themselves” (GIZ 2011). In addition to whatever cost saving is inherent in a capital-intensive approach to solid waste management, the involvement of politically disengaged international actors carries a bias toward the techniques used in developed countries regardless of the social consequences.

At the extreme of this modernization process is mechanical separation of recyclables, a process increasingly common in the US and Europe. In modern recycling plants, optical sensors, conveyor belts and pneumatic blowers sort materials by type. Chile’s waste management firm EMERES, for example, has already begun construction on one such plant with funds from Spanish investors. One official claimed, hyperbolically, that it will be the first plant in Chile with “zero” human intervention; certainly there will be few jobs for waste pickers (La Tercera, 2013). Municipalities are also under pressure to modernize unsightly, unhygienic landfills and to adopt waste-to-energy schemes. This entails closing dumps and excluding waste pickers from scavenging at the most concentrated disposal point.

The momentum behind dump closure for the sake of local public health and reduced greenhouse gas (GHG) emissions is supported by international donors such as the World Bank and the InterAmerican Development Bank. Technical support has been provided by the US Environmental Protection Agency, specifically for biogas conversion in Managua, Nicaragua, Heliconia, Colombia and Belo Horizonte, Brazil. The Clean Development Mechanism (CDM), which provides developing countries with funds for

projects that reduce or avert greenhouse gas emissions, has also financed this trend.<sup>3</sup> As of 2010, 25% of the Clean Development Mechanism projects in Latin America were waste related and most entail dump closure (IDB 2011).

Dump closure and mechanization is not happening without resistance from waste pickers. Since a large proportion of waste pickers work inside dumps, landfill closure has accelerated pressure to develop alternative livelihoods through waste picker inclusion programs. Controversial cases of closing and converting landfills into energy plants are *Lomas los Colorados II* in Santiago de Chile, *La Chureca* in Managua, *Kara Kara* in Cochabamba, Bolivia, *Jardim Gramacho* in Rio de Janeiro and *Bordo Poniente* in Mexico City. While protests rarely succeed in stopping landfill modernization, few projects now move forward without some effort to address the needs of displaced waste pickers.

### **III. Inclusion as a Solution**

A newly emerging paradigm envisions increasing degrees of waste picker organization and participation in municipal waste management. From the municipality's perspective, there are several benefits: from a public health perspective, the inclusion of waste pickers in the municipal collection system removes the workers themselves from danger in the dump, and it allows for more frequent and thorough collection of neighborhood waste, reducing illegal dumping and backyard burning of trash. Outsourcing to the cooperatives' cheap labor can also save the cost of unionized municipal sector labor. In fact, as independent entities that acquire revenue from the sale of scrap, cooperative members often garner earnings that fall well below the minimum wage. In some cases, the city shares in the revenue from scrap sales. Cost-saving also comes from reduced landfill costs, as waste pickers divert more material to recycling.

Inclusion is also used as an anti-poverty program, particularly in poor countries where budgets are strained. Without the resources to offer conditional cash transfers, housing or better jobs, communities can support poor families' own income-generating streams by allowing waste pickers to work within MSW facilities or to share transportation. Elsewhere, inclusion is used as compensation to losers in the modernization process. In wealthier countries, dump closure is almost inevitable as political pressure increases to reduce the air pollution and water contamination from open dumps, and eligibility for carbon credits cuts costs. Protests from displaced dump workers can be mitigated by offering trash collection routes or by creating jobs within recycling centers.

While inclusion has appeal as a general idea, *how* it is done varies widely, with considerable variation in the extent and distribution of benefits. Rarely are waste pickers simply brought onboard with jobs in the formal waste collection system. Although this would surely constitute full inclusion, it meets fierce resistance from workers within the formal sector who fear job loss and claim that waste pickers are unprepared to meet job expectations. Politically, full inclusion of waste pickers as formal sector workers seems to be a non-starter. More common is a parallel system in which cooperatives are given

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<sup>3</sup> The release of methane from solid waste disposal sites is said to account for 2.4% of total greenhouse gas emissions in Brazil and 8.1% in Mexico (Hoornweg and Bhada-Tata, 2012).

access to waste in MSW facilities or tasked with collecting recyclables along certain routes while the formal sector continues to collect trash. Formal sector workers' acceptance of this arrangement depends somewhat on global scrap prices, as they themselves seek valuable materials while collecting trash.

Because waste pickers are rarely brought on as formal workers, partnerships are easier to set up if waste pickers are organized, a task supported by advocacy groups such as WIEGO. Very basic steps toward inclusion often involve creating waste picker cooperatives, building a sense of unity and common purpose among members, and initiating the engagement of municipal authorities to give waste pickers access to materials and underserved neighborhoods. Uniforms, safety vests and ID tags imbue a sense of professionalism and facilitate social acceptance as waste pickers move about the city. Public awareness campaigns can reinforce this by increasing residents' comfort with the new collection system. Importantly, such campaigns also encourage household sorting of recyclables to reduce waste pickers' costs.

Where cooperatives are already established, the challenge is to raise productivity to generate higher incomes. This typically involves capitalizing cooperatives with trucks, warehouses and processing equipment so that workers can gather larger quantities with more consistent quality. Municipalities often donate facilities directly or pay for rent and utilities on behalf of the cooperative. Inclusion can take the form of geographic sectors within the city that are independently served by waste picker cooperatives, as has been the case in Colombia. In another model, seen in Mexico City, waste pickers ride trucks with the formal MSW workers and withdraw recyclables. However, a paired system of this type runs the risk of creating hierarchies on trucks in which formal workers define who gets what, including tips, as all workers keep an eye out for valuable waste. At its worst, truck drivers exploit waste pickers by demanding payment for a place on the truck.

A formal, private waste collection industry usually exists alongside the municipal system, serving restaurants, retailers, industry, and sometimes the residential sector. Depending on the city, this sector includes firms that compete with informal waste pickers in gathering recyclables such as paper, cardboard, plastics and vegetable oil from businesses.<sup>4</sup> Some municipalities have spun off waste collection services to quasi-state enterprises with independent budgets and autonomous decision-making. EMERES, formed through an association of 22 municipalities in the south of Santiago, Chile, is one such example.<sup>5</sup> It manages waste collection as well as the area's largest landfill, and it vets bids for contracts by other companies (including French and US firms) to modernize landfills. Fully privatized trash collection also takes place. KDM, a holding company of

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<sup>4</sup> In 2008, waste pickers from La Chureca, Managua, blocked access to the dump, complaining that the city had adopted a policy of encouraging municipal employees to divert recyclables to formal sector companies that pay taxes. This incident raises questions about competing policy priorities. (<http://www.ipsnews.net/2008/03/nicaragua-fighting-over-societysquos-scrap/>)

<sup>5</sup> SABESP in São Paulo, Brazil is an example of a publicly regulated utility that handles water and solid waste sanitation. Although it is profit-driven and must respond to investor interests, it also works closely with the municipality to address public priorities.

Spain's Urbaser and USA's Danner Company, operates in Chile to provide residential and industrial collection, waste treatment and recycling, and construction and operation of sanitary landfills and waste-to-energy plants (KDM website, Quienes Somos, 2014). Its trucks can be seen throughout Chile under the names Vitacura and DeMarco, ferrying waste to and from transfer stations. Some private companies not only collect waste but build and operate waste-to-energy plants. At the other end of the disposal process, large international firms such as Petstar have built plants to recycle plastic within the region.

#### *A. Inclusion in practice across the region*

The benefits of inclusion are evident in several cities. In Buenos Aires, the city partnered with the Movement of Excluded Workers (MTE), a waste picker cooperative of 2500 members formed in 2005. The municipality provides the cooperative with buses and trucks to transport workers and recyclable materials, and a monthly stipend of US \$209 per member to supplement earnings from the sale of scrap. Workers receive health insurance, liability insurance and subsidized child care (GAIA 2012, 78).

Brazil has the most extensive inclusion programs. In the early 1990s, *catador* cooperatives such as COOPAMARE in São Paulo and ASMARE in Belo Horizonte established themselves as political activists. With the election of President Lula de Silva in 2003, two important laws were passed: Decree 5940/60, mandating federal agencies to deliver recyclable materials to waste picker cooperatives, and Regulation 11,445/07 allowing municipalities to end contracts with commercial suppliers and exempting cities from bidding procedures that put *catadore* cooperatives at a disadvantage relative to commercial firms (Diaz 2012b). The city of Belo Horizonte also provided ASMARE with a monthly subsidy, recycling warehouses, trucks and environmental education. Similar programs exist in São Paulo, Londrina and Porto Alegre. While they are politically well-received, each program only provides jobs for about 400 workers, a fraction of the waste picker community.

In Bogota, although waste picker activism began in 1987, the city only adopted nondiscriminatory inclusion policies in 2013 under court order. The city now pays waste picker cooperatives for waste collection, putting them on equal footing with commercial collectors. Prior to this, waste pickers were permitted to participate in collection but their income was derived entirely from the sale of the recyclables, as it is in most inclusion programs. Under the new scheme, cooperatives receive \$44 per ton of waste as payment for collection services, providing \$200 per month and doubling the incomes of the 790 participating waste pickers involved (IPS News 2013).

In poorer countries, particularly in Bolivia and Nicaragua, cooperatives are less well-developed economically and lack the technology, financing and regulatory framework to

establish collection networks. ‘Inclusion’ has been more limited, typically involving social sector support rather than full integration into the waste management system.<sup>6</sup>

#### **IV. Three cases: A Closer Look at Opportunities and Challenges**

In this section, we discuss three cases which demonstrate varying degrees of success with inclusion as well as the limitations of inclusion as a long run strategy to address waste pickers’ needs.

##### *A. Luz del Futuro: waste pickers in Bluefields, Nicaragua*

Luz del Futuro is an all-women waste cooperative founded in 2012 in Bluefields, on the Caribbean coast of Nicaragua. In this coastal region, three-fourths of the population lives in poverty. The illiteracy rate among residents over age 10 is 43%, with a much higher rate among females (FADCANIC 2013).

Co-author Marta Marelló observed this cooperative in 2013 in the context of a project to obtain municipal approval for a door-to-door collection system, allowing the cooperative to collect recyclables directly from households instead of the dump. A more ambitious goal was to build a comprehensive recycling network among three towns on the Caribbean coast to reduce transportation costs. In this region, the biggest obstacle to financially viable recycling has been the high cost of shipping. All material is sent to Managua, near the Pacific coast, and from there to recycling plants abroad, including some in China.

The women of Luz del Futuro made their livelihoods by collecting and selling metals and plastic from the municipal sanitary landfill of Bluefields. As of 2013, the cooperative had twenty members and was not accepting new workers because revenues were so low. The women had little schooling, averaging three to four years, with the most educated worker having completed middle school. Their homes were wooden shacks in a very poor neighborhood at the edge of the town with no running water or sanitation.

Before the cooperative formed, these women picked trash at a dump located in their own neighborhood. They worked alongside children and scavenging pigs in an area infested with snakes. Two changes transformed their daily work: the municipality’s investment in a sanitary landfill where waste is covered with dirt at the end of each day, and the nearly simultaneous formation of a cooperative with municipal permission to access the landfill. Upon formation, the cooperative banned children under 18 from working in the new site.

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<sup>6</sup> Even in Peru, a much richer country, efforts at inclusion are arguably not so much aimed at creating a newly competitive waste management sector so much as political acknowledgement. As Albina Ruiz, executive director of Ciudad Sostenible put it, “*Esta ley permitió abrir un camino de esperanza. Con ella, hoy en Perú los recicladores son visibles, ya no van a pasar más desapercibidos, son un sector pujante y reconocido.*” (“This law opened a path of hope. With it, recyclers in Peru are visible, they will no longer go unnoticed, and they are a thriving, recognized sector.”)

From the municipality's perspective, the main concern in waste management has been public health. People pay little attention to waste disposal, despite the presence of municipal collection services, and often throw garbage on the street or into streams or burn it in backyards. The aggregation of waste – even into the local landfill – presented a challenge. Permitting the women of Luz del Futuro to gather waste door to door provided potential public health benefits, while representing a significant step toward profitability for the cooperative.

The new landfill where the women were invited to work is located on a hill a couple of miles from town. However, the uphill road is steep and the distance too far for the women to walk and the women lack independent transportation. To go to work they rely on the municipal garbage truck that goes to the landfill twice a day. Although they complain that the truck is late and does not respect their work schedule, transportation is an important aspect of their 'inclusion.'

The cooperative operates with little machinery, no safety measures, and little support from external entities. The women use a long stick with a hook at the end to pick valuable recyclables from trash. They limit their collection to plastic and metals, particularly aluminum cans, as the cost of transportation to Managua makes it uneconomical to recycle paper and glass. Collected plastic is then trucked by municipal workers to a nearby open space owned by the city, to be washed, sorted and compacted. Some women refused to process material for fear of cuts and infections, and confined themselves to collecting recyclables. Under an agreement with the municipality, the women in charge of plastics can borrow a compactor. However, perhaps because of gender discrimination, women are not allowed to operate the compactor, which is operated by a male municipal worker. Because of limited access to the machinery, the women hope to eventually own the equipment necessary to process materials.

Luz del Futuro sells the plastic to the municipality for a fixed price of three Cordobas (12 US cents) per kilogram, regardless of the type of plastic or market conditions. The municipality then transports it first to El Rama by barge and from El Rama by truck to Managua. A staff member of the municipality personally follows the journey of the plastic to negotiate the final price in Managua, where it is shipped to global markets.

The revenue received in Managua by the municipality ranges from 3-7 Cordobas (12-30 US cents) per kilogram of plastic, depending on several factors. If the plastic has been washed, labels have been removed and it is not burned, the plastic will sell for the highest price. Otherwise the price mainly depends on the quality of the plastic itself. Most of the revenue received is needed to cover transportation, staff wages and electricity, leaving little to cover the municipality's support for the cooperative. An alternative transportation route, envisioned by the IDB and UNDP, might be critical to the success of this inclusion partnership between the city and the cooperative.

### *Luz del Futuro: Issues*

Before 2012, the municipality of Bluefields had never worked with recyclables and thus faced a two-part learning process of understanding the scrap market as well as the complexity of coordination with a new cooperative. The mayor recognized the environmental and social benefits of the cooperative, but the city's financial and in-kind support was put in jeopardy when new elections took place in November 2012. For a while it was uncertain whether the new mayor would support the project, although he eventually did so because of strong support from the municipal environmental council. Without policy continuity, it is hard to see how this cooperative could become a successful commercial operation.

The women of Luz del Futuro are extremely poor and most needed a second job to support the family as its primary breadwinner. Scheduling and childcare were primary concerns. From their perspective, the greatest accomplishment of the cooperative was the banning of children from dumpsite and the arrangement of better childcare.

As a young cooperative, Luz del Futuro had yet to learn the power of synergy from teamwork. Before forming a cooperative, they worked individually, fighting over every tin can. The decision to work together improved matters, in part because it elicited more support from the municipality and outside organizations, but the women still needed to coordinate their work as a team. Although they were grateful for collaboration with the city, they made little money and expressed a need to identify new ways to improve their livelihoods. The women lamented their lack of administrative and managerial skills. There were complaints about the distribution of wages, inconsistent bookkeeping, the distribution of work and the monitoring of work. Many women felt that some members worked harder than others, or that others frequently missed work.

Poor communication within the group and inefficient meetings also interfered with productivity. The president wielded strong leadership with little room for power dissemination and transparency. At the official registration of the cooperative, the president received a handbook of the fundamental principles of cooperativism, emphasizing the shared responsibilities of each member, but illiteracy discouraged its circulation. Technically, there is an executive board but its members either forgot they were a part of it or did not know what power to exercise. Even if long-term ideas and plans were brought up in meetings, such as the opening of a bank account or starting a greenhouse, the women did not seem to know how to pursue them as a collective.

Although the women of Luz del Futuro wanted to expand their collection of trash from the dumpsite to city streets and residences, a number of obstacles stood in their path. They needed first to strengthen their internal organization, to clarify rights and responsibilities of cooperative members, to run meetings constructively and to move from ideas to execution. Their poverty also made it difficult to become competitive with independent waste pickers. Without sufficient equipment to sort and process trash, the skills to such that equipment, the transportation infrastructure to get materials to market cheaply, and a social context in which to implement household sorting, a project of waste picker inclusion could only accomplish so much.

In such a poor region, the resources available to build successful livelihoods through waste picker inclusion are limited. Cooperative members themselves lack both the human and financial capital to take full advantage of access to municipal waste, and the municipality lacks funds to substantially support their development. Inclusion represents a relatively inexpensive anti-poverty program, with a small but positive impact.

### *B. Recycling cooperatives on the outskirts of São Paulo*

In 2012, co-author Marta Marelo, worked with six cooperatives in the São Paulo metropolitan area: COURES, CORA, CRUMA, COOPERALTO, COOPRECICLAVEL, and ARES. The project's goal was to assess the potential of a public awareness campaign to make waste pickers more visible to the public and to attract more recyclables. In addition, the project aimed to build a network of cooperatives that would sell waste vegetable oil together, replicating a model that was already in place to sell paper.

The cooperatives observed in Brazil were well-established. They could count on strong internal organization, working space, machinery and trucks, as well as support from municipalities and non-governmental entities. Each coop included between 20 and 80 permanent members, with additional nonmembers participating as temporary workers. All six cooperatives had established rules of management, enforced by an elected board of directors. Meetings to make decisions and distribute wages were held regularly. Some are part of the National Movement of Brazilian Waste Pickers (MNCR), with whom they interacted closely, while others maintained their independence and distance.

Under an agreement with local municipalities, cooperatives collect recyclables directly from households and sell them independently. Although supplemental revenue comes from the municipalities, development banks, and corporations such as Petrobras, most revenue comes from the sale of scrap. Some cooperatives are in contact with a large pool of potential buyers, which is beneficial in negotiating prices. Others do not have the option of ending a relationship with a buyer because they rely on very few of them. Even cooperatives located close to one another are offered different prices for the same product depending on negotiating skills, volume and transportation arrangements.

All cooperatives have large, open warehouses to conduct their operations. Warehouse space is separated into zones: in one zone, trucks unload unsorted trash; in another there is a conveyor belt where workers sort trash into large containers; yet another zone is dedicated to storage of loose recyclables and further subdivisions according to materials. There are also zones where machinery is kept and compacted recyclables sit waiting to be sold. Warehouses have offices, a small kitchen, lavatories and showers. In terms of machinery, these Brazilian cooperatives typically have a more than one compactor, a shredder, a conveyor belt and multiple trucks that are used for door-to-door collection. With regard to materials, they collect and sell many recyclables: paper, cardboard, many types of plastic, Styrofoam, Tetra Pak, vegetable oil, metals, plastic bags and glass. Even if there is no cutting edge technology, these cooperatives are well-capitalized.

The Brazilian cooperatives enjoy the support of their municipality and the regional waste picker union. The municipalities help in a variety of ways, often by paying for rent or utilities, paying for fuel for trucks, or providing work space. The local labor union, *Rede Catasampa*, functions as the local São Paulo chapter of *Movimiento Nacional dos Catadores de Materiais Reciclaveis* (MNCR) and is comprised of fifteen recycling cooperatives. Its main objective is to improve *catadore* livelihoods by defining strategies to increase the revenue from recyclables and by training *catadores* in sustainable business practices. Additional support comes from the local development banks and NGOs. It is widely felt that some cooperatives receive more help than others from their municipality and *Rede Catasampa* due to favoritism and political corruption.

In contrast to the low standards of living among most Latin American waste pickers, some Brazilian cooperative members own cars and almost all own cell phones. They all wear uniforms at work and some use safety measures such as gloves. Nonetheless, they live well outside the mainstream of São Paulo's affluent lifestyle.

### *Challenges*

Even among these well-established cooperatives, one can observe a variety of constraints, highlighted by the failure of efforts to promote a public awareness campaign. The single most important obstacle to expansion is the lack of space. At least half of the cooperatives interviewed lamented that operations were constrained by available space. Because of the volatility and seasonality of commodity markets, materials often sit around in warehouses. Paper, for example, fetches a higher price in the months before Christmas – and prices of other products such as copper are subject to speculation. Independently of this project, COOPERALTO implemented a public awareness campaign to increase collection of various materials but had to stop it because they could not take in more material. With more space, cooperatives could hire more workers and provide jobs for more people.

Second, cooperatives enjoy different degrees of partnership with their respective municipalities. Of the six cooperatives, one had already partnered with the local government to create a public awareness campaign, three seemed likely to get municipal support for an awareness campaign, while the remaining two had little hope of receiving help from their municipality. COOPRECICLAVEL, located in Guarulhos, not only had a good relationship with its municipality but a partnership with two hundred public schools where children were encouraged to bring home recycling ideas. It also had a partnership with Acai, a private firm that donated waste oil and other scrap to the cooperative. By contrast, CRUMA and COURES did not enjoy good relationships with their municipalities; they received little support and were excluded from decision-making about waste management.

A third obstacle to the design of a public awareness campaign was that, on similar occasions when the cooperative partnered with a private company, the latter received all of the visibility. For example, the cooperative CRUMA in the town of Poá partnered with Tetra Pak, the Swedish multinational food packaging and processing company, for a campaign in which the cooperative distributed Tetra Pak products to the community.

The problem was that the products did not contain much information about the cooperative, thus drawing attention away from CRUMA while enhancing the environmental reputation of the company. As a result, CRUMA refused to enter deals where the partners might gain more attention than the cooperative. Similarly, when CORA implemented the oil program Cata Oleo, the company Bioauto received advertising in exchange for minor infrastructural help. CORA members felt the exchange was not really fair. Such agreements, viewed as paternalistic, can undermine inclusion efforts.

Fourth, cooperatives of *catadores* are not the only party interested in waste oil and other recyclables. The market is crowded with individual *catadores* and middleman firms that both buy and collect oil for resale to biodiesel processors. Often middleman companies can offer cleaning products to restaurants and businesses in exchange for the oil, while cooperatives cannot afford to offer any compensation for waste. Competition not only comes from other recyclers but from groups that repurpose waste. The president of COOPERALTO, the cooperative located in Biritiba-Mirim, noted that an oil collection campaign would not work in his town due to the cultural tradition of the local people using waste oil to make soap for sale.

For these reasons -- lack of space, uncertain support by the municipality, risk of lack of visibility if other parties are involved, and competition -- no agreement was made to begin a coordinated public awareness campaign in the six towns. However, there was still hope of forming a network of cooperatives to sell oil together as a way of negotiating better prices, much as an existing network had done in the paper business.

Lessons garnered a nascent paper network provided insight about the opportunities and challenges of networking *among* cooperatives. Before the paper network was formed, cooperatives sold paper for R\$ 0.1/kg; by selling paper together, they quintupled the price received. The network was formed and supervised by *Rede Catasampa*, the local labor union, which provided rules and some support to the network in exchange for advertising.

Despite the dramatic increase in price and overall success, the paper network incurred a few problems. Paper from participating cooperatives was stored at CRUMA because it had the most storage space, but it lacked sufficient space and funding to purchase a sorting machine for the paper. Its president was also poorly informed about potential buyers and market prices of paper in greater volume. Because operations were so centralized, only the cooperatives located close to CRUMA participated in the network, despite efforts to engage outlying cooperatives.

When presented with the idea of creating a waste oil network modeled on the existing paper network, representatives raised doubts that suggested experience with the imperfections of a network: Who will be in charge of negotiations? How will transparency be ensured? To whom will the oil be sold if cooperatives already have links to different buyers? Is it really economical to transport the oil to a centralized location before sale? How is it possible to form a network if cooperatives collect different quantities of oil? How does the revenue get split?

A key stumbling block was hesitancy about the participation of *Rede Catasampa*, the local labor union affiliated with the National Movement of Brazilian Waste pickers. A few cooperatives agreed to identify the network with the union, while others firmly refused to participate in the network if it was in charge. This revealed a political problem: some members believed in the work of *Rede Catasampa*, while others challenged its lack of transparency and consistency, claiming it favored certain cooperatives over others with monetary compensation and equipment donations. In the end, a waste oil network with the six cooperatives was not created.

Although these Brazilian cooperatives are far more sophisticated than Luz del Futuro, and municipalities already provide considerable support, still closer relationships are possible which might raise incomes among cooperative members. Yet it is also clear that closer cooperation could work to the advantage of some cooperatives but to the detriment of others, as well as to waste pickers outside *Rede Catasampa*. There are policy trade-offs to be made between targeting groups for their socioeconomic needs versus for their waste management efficiency.

### *C. The closing of Bordo Poniente<sup>7</sup>*

Until its official closing in December 2011, Bordo Poniente was the largest landfill in Mexico City. It received an average of 12,600 tons of trash daily, serving 20 million people and occupying approximately 1,000 hectares. After 27 years, it was well beyond capacity. Its rotting, unprocessed waste was also said to generate a significant share – perhaps a quarter – of Mexico City’s greenhouse gas emissions. A consortium of Mexican and Spanish companies, BMLMX Power, won a contract in 2012 to transform Bordo Poniente into a waste-to-energy plant, generating 58 MW/hour and saving Mexico City as much as a billion pesos.

Among the biggest challenges has been resistance from the roughly 5,000 pepenadores who worked within Bordo Poniente, 1,500 of whom belonged to the union, *Frente Unico de Peperadores del Distrito Federal*. Although the project explicitly contains language for the inclusion of waste pickers, it quickly became apparent that most waste pickers lacked the technical skills to manage the biogas plant or equipment in a modern recycling facility. Eighty jobs were promised in a composting facility, with incomes to be derived from the sale of compost, a proposal dismissed as grossly inadequate.

In response to the announcement of the closure of Bordo Poniente, pepenadores blocked its entrance, initiating a protracted negotiation between the state, BMLMX and the waste pickers. One of the government’s first concessions was an agreement to continue delivery of trash to Bordo Poniente for sorting before its eventual transfer to other locations.<sup>8</sup> This was a costly concession, as it involved detouring trucks, unloading their

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<sup>7</sup> Much of the material from this case study has been provided by Emilio Cano, President of Ecobanca, an environmental consulting organization in Mexico City. We gratefully acknowledge his help but take full responsibility for any opinions and errors.

<sup>8</sup> Much of the trash was destined to incineration at CEMEX cement factories, a controversy not addressed here.

trash content and then reloading it after sorting. As of late 2013, the government had promised to leave a sorting facility at Bordo Poniente open indefinitely, an inefficient but politically convenient outcome.

The controversies surrounding Bordo Poniente's closure have brought to light several issues that complicate any vision of waste picker inclusion as a simple 'triple bottom line' solution to the problems of poverty, environment and municipal finance.

First, landfill modernization – in which trash is compacted, covered with soil and managed for emissions – makes wastepicking difficult. While conveyor belt sorting machines at dump entrances provide an opportunity for waste pickers to gather materials, these are increasingly being replaced by more sophisticated systems that can process many more tons of trash with little labor.

Second, the opportunities for inclusion of Bordo Poniente waste pickers in the municipal collection system are limited because other waste pickers already gather waste from door to door, both independently and as informal partners on municipal trucks. Few city trucks rely solely on the labor of municipal employees. Instead, waste pickers already load trash into trucks, gathering valuable materials for sale and tips from households. Revenue from this is informally shared between drivers and other formal employees and accompanying waste pickers. There is not much room for inclusion of additional waste pickers in this system.

Third, the sociopolitical dynamics of wastepicking in Mexico City and other megacities is far more complex than is typically portrayed in the literature on inclusion. It is true that waste pickers exist outside the formal economy in the sense that they do not pay taxes, but few are independent entrepreneurs. A highly organized syndicate dating back to the 1960s controls this sector. Its leader, Cuauhtémoc Gutiérrez, himself the son of 20th century leaders, is said to have inherited and accumulated a vast fortune built on the labor of informal waste pickers. He not only controls much wastepicking but has served in a variety of official and political posts, including as a legislator and as president of the PRI political party in Mexico City. While wastepicking remains illegal in Mexico City under the *Ley de Residuos Sólidos del Distrito Federal*, ties between waste pickers and the government run deep. By maintaining an informal, illegal labor force of waste collectors, the city not only saves wages but is said to facilitate a corrupt system of kickbacks across layers of waste pickers and municipal employees. Any 'inclusion' program must begin with an understanding of this complex social structure.

While the public health and carbon capture benefits of landfill conversion to biogas plants may warrant pursuit of projects like the one at Bordo Poniente, the fate of waste pickers is not easily solved through inclusion in the new system. Instead, what one observes at the end of a modernization process envisioned as 'sustainable' is a city that might become greener but has yet to address the marginalization of its *pepenadores*.

## V. Conclusions

Municipalities throughout Latin America have responded to waste picker activism by embracing the opportunities that ‘inclusion’ can offer: a means of income for the poor that does not drain city budgets, and an inexpensive way to green the city by increasing recycling and reducing litter. Support for waste pickers has been aided by a rise in environmental consciousness, which has prompted mayors to raise recycling goals, and by a rise in the prices of recycled paper and PET plastic in the past decade. Waste management programs that incorporate waste pickers are viewed as potential contributors to the ‘triple bottom line’ – creating jobs, reducing the environmental damage caused by growing use of disposable goods, and cutting fiscal costs by reducing landfill expenses. The concept of Integrated Solid Waste Management (ISWM) is now a well-established term in an aspirational discourse about trash.

In our own review of waste picker inclusion, the process of inclusion is bumpy and one which hardly proceeds naturally as a consequence of cooperativization and solid waste modernization. In observing three cases— Luz del Futuro in Nicaragua, recycling cooperatives outside of São Paulo, and the Bordo Poniente closure in Mexico City— we note significant challenges.

The principle lesson is that the inclusion process brings new challenges at each step of development, with some intractable limitations occurring at the highest level of modernization. Opportunities at the lowest stages of organization and inclusion should not be confused with a long-run development strategy.

In the poorest countries, waste pickers almost certainly need more support than most municipal solid waste agencies can offer. The women of Luz del Futuro not only required support in the form of access to space, equipment and a machine operator. They needed daycare for their children, literacy and math skills, and management and business training. Inclusion can be part of a broader social agenda that incorporates microenterprise development, but such programs depend on resources outside the typical portfolio of a city waste collection agency.

In middle-income countries, new waste picker cooperatives find themselves at odds with existing networks of waste pickers (including waste picker unions), as well as with formal sector workers who exert considerable political power. Where inclusion is taken up by the municipality with the intent of increasing recycling rates, waste picker cooperatives must negotiate a host of issues, including access to equipment and space, coordination of sales to maximize pricing across seasons, materials and geography, and the difficulty of resolving conflicts within the wastepicking sector itself. The most successful of these mid-level inclusion efforts tend to secure income for some workers while limiting new entry by other waste pickers, effectively excluding some of the most vulnerable independent waste pickers.

A serious limitation of ‘inclusion,’ even in apparently successful situations, becomes apparent when one considers the number of waste pickers involved. In Bogota, for example, an estimated 14,000 people survive as waste pickers, while the inclusion

process provides incomes for 700 people. Data from Brazil, where an estimated 230,000 people live as waste pickers, inclusion provides jobs for 700 people in São Paulo, 450 in Porto Alegre, 400 in Londrina and 380 in Belo Horizonte (WIEGO, 2012). Even if these numbers are crude approximations, the gap between need and solution calls into question the prospects for full inclusion.<sup>9</sup>

The most sophisticated MSW systems, which now aim to seal open dumps for biofuel production and mechanize waste processing, pose a significant threat to the livelihoods of waste picker cooperatives. Efficient waste management is not labor intensive enough to absorb all or even a small share of the people who survive on trash scavenging. There are almost no jobs as one moves up this path, partly because economies of scale and scope favor mechanized operations. There are also far greater sums of money involved, which may distort decision-making in ways that fail to move waste pickers into more appropriate labor-intensive industries.

When one considers the criminalization of waste pickers that predominated in the late 20<sup>th</sup> century, advocates of inclusion have made great strides in garnering respect for the rights of waste pickers. To realize a vision of genuine social inclusion, programs to support waste pickers must afford these workers with opportunities throughout the broader economy with the development of basic literacy, job skills and social resources. Waste picker inclusion is a poor substitute for training programs that might yield much higher levels of productivity in other sectors, such as manufacturing or retail services. Like most people at the bottom of the economic pyramid, waste pickers seek and deserve dignity and recognition of their rights, but wastepicking is not a dearly held avocation. As one observer noted, “You don’t rummage through piles of garbage looking for recyclable items if you have other options in life.”<sup>10</sup>

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<sup>9</sup> Still, as one wastepicker in Jardim Rio Gramacho said in support of a meager recycling effort, “99 is not 100.” A shortage of opportunity through inclusion is not its absence.

<sup>10</sup> Peter Coy, *Bloomberg Businessweek*, April 14, 2014.

## References

- Ahmed, Shafiul Azam, and Mansoor Ali. "Partnerships for Solid Waste Management in Developing Countries: Linking Theories to Realities." *Habitat International* 28: 467-479, 2004.
- AVINA. *Reciclaje Sostenible y Solidario*. Brasil: Fundación Avina, 2008.
- CEMPRE. "CEMPRE and Inter-American Development Bank (IDB) hold an event to promote the Brazilian model of recycling." *PR Newswire*. October 15, 2013 (accessed May 1, 2014). <http://www.prnewswire.com/news-releases/cempre-and-inter-american-development-bank-idb-hold-an-event-to-promote-the-brazilian-model-of-recycling-227826441.html>
- Clarke, Felicity. *Waste Pickers Struggle from Landfill Closure*. June 21st, 2012. <http://riononwatch.org/?p=4032> (accessed 2013).
- Coy, Peter. "The Scorned but Valuable Work of Waste Pickers." *Bloomberg Business Week*. April 14, 2014 (accessed May 1, 2014). <http://www.businessweek.com/articles/2014-04-14/study-released-at-world-urban-forum-shows-value-of-waste-pickers>.
- CWG. *Solid Waste Collection that Benefits the Urban Poor*. Collaborative Working Group on Solid Waste Managements in Low- and Middle-Income Countries, 2003.
- CWG; GIZ. *The Economics of the Informal Sector in Solid Waste Management*. Collaborative Working Group on Solid Management in Low- and Middle-Income Countries (CWG); Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2011.
- Dias, Sonia. *Waste and Development - Perspectives from the Ground*. Institut Veolia Environment, 2012.
- Ensing, Anna. "Child Labour in an Urban Setting: Markets and Waste Collection in Lima," in Lieten, G.K. (Ed.) *Hazardous Child Labour in Latin America*, 2011.
- FADCANIC. *Autonomous Regions of Nicaragua*. 2013.
- Fergutz, Oscar, Sonia Dias, and Diana Mitlin. "Developing Urban Waste Management in Brazil with Waste Picker Organizations." *Environment and Urbanization*, 23(2) 597-608, 2011.
- GAIA. *On the Road to Zero Waste: Successes and Lessons From Around the World*. Global Alliance for Incinerator Alternatives (GAIA), 2012.
- Hoornweg, Daniel and Perinaz Bhada-Tata. *What a Waste: Global Review of Solid Waste Management*, World Bank, Washington, DC, 2012.
- ICLEI. "ICLEI Case Studies." *ICLEI.org*, June 2009 (accessed July 2012). <http://www.iclei.org/resources/publications/iclei-case-studies.html>

- IDB, AIDIS, PAHO. "Regional Evaluation on Urban Solid Waste Management in Latin America and the Caribbean: 2010 Report." 2010.
- IDB, "BR-T1156 : Social and Economic Integration of Informal Solid Waste Pickers," Project description, (accessed May 1, 2014). <http://www.iadb.org/en/projects/project-description-title,1303.html?id=ATN%2FOC-11887-BR#doc>
- IDB, *Regional Evaluation on Solid Waste Management in Latin America and the Caribbean, 2010 Report*, InterAmerican Development Bank, Washington D.C. 2011.
- IDB. "Regional Initiative Invests More than \$8 Million to Improve Conditions for Recyclers in Latin America." Inter-American Development Bank website, October 23, 2013 (accessed May 1, 2014). <http://www.iadb.org/en/news/news-releases/2013-10-23/recyclers-in-latin-america-and-the-caribbean,10619.html>.
- ILO. "Promoting Green Jobs through the Inclusion of Informal Waste Pickers in Chile." International Labor Organization website, July 10, 2013 (accessed May 1, 2014). [http://www.avina.net/eng/wp-content/uploads/2013/07/K-10831-ILO-Geneva-brochure-Chile\\_V3-no-bleed-copia.pdf](http://www.avina.net/eng/wp-content/uploads/2013/07/K-10831-ILO-Geneva-brochure-Chile_V3-no-bleed-copia.pdf).
- INFOCOOP. *Los 7 principios del cooperativismo*. 2013. [http://www.infocoop.gob.ni/index.php?option=com\\_content&view=article&id=8&Itemid=6](http://www.infocoop.gob.ni/index.php?option=com_content&view=article&id=8&Itemid=6) (accessed August 2013).
- LaGiglia, Michael. "Solid Waste Management NAMA in Peru," Center for Clean Air Policy. August 13, 2013, (accessed May 1, 2014). <http://ccap.org/programs/solid-waste-management-nama-in-peru>.
- Le Goff, P.L. "*Los Cartoneros* of Buenos Aires: Waste Scavenging and the Appropriation of Space in the Neoliberal City," Master's Thesis, St. Anthony's College, Oxford, 2011.
- Malkin, Elisabeth. *For Some in Mexico, Trash is a Treasure Worth Defending*. February 16, 2012, (accessed 2013). [http://www.nytimes.com/2012/02/17/world/americas/for-some-in-mexico-trash-is-a-treasure-worth-defending.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2012/02/17/world/americas/for-some-in-mexico-trash-is-a-treasure-worth-defending.html?pagewanted=all&_r=0).
- Marshall, Rachel E., and Khosrow Farahbakhsh. "Systems Approaches to Intergrated Solid Waste Management in Developing Countries." *Waste Management*, 2013.
- Medina, Martin. "Serving the unserved: informal refuse collection in Mexico." *Waste Management & Research*, 390-397, 2005.
- REDLACRE. "Red Recicladores." *Red Recicladores*, 2012 (accessed August 2013). <http://redrecicladores.net/>
- Ruiz, Albina, César Zela, Manuel Pajuelo, Paloma Roldán Ruiz, and José Carlos Rodríguez. *Through Garbage: Changing Minds and Hearts*. Lima, Peru: Ciudad Saludable, 2009.

- Schamber, Pablo Javier. *El Sector Informal en la Gestión de Residuos: El Caso de los Cartoneros de Buenos Aires*. D-Waste, n.d.
- Scheinberg, Anne. "Value Added: Modes of Sustainable Recycling in the Modernisation of Waste Management Systems." *PhD Thesis*. 2011.
- Scheinberg, Anne, Sandra Spies, Michael H. Simpson, and Arthur P.J. Mol. "Assessing Urban Recycling in Low- and Middle-Income Countries: Building on Modernised Mixtures." *Habitat International*, no. 35: 188-198, 2011.
- Silva, José Adán. "Nicaragua: Fighting Over Society's Scraps." *Inter Press Agency*. March 20, 2008 (accessed May 1, 2014). <http://www.ipsnews.net/2008/03/nicaragua-fighting-over-societyrsquos-scraps>.
- UN-HABITAT. *Collection of Municipal Solid Waste in Developing Countries*. Washington DC, 2010.
- UN-HABITAT. *Solid Waste Management in the World's Cities: Water and Sanitation in the World's Cities 2010*. Washington DC, 2010.
- WIEGOa. *First Global Strategic Workshop of Waste Pickers: Inclusive Solid Waste Management*. Cambridge, MA, USA: Women in Informal Employment: Globalizing and Organizing, 2012.
- WIEGOb. *God is My Alarm Clock*. Cambridge, MA. Women in Informal Employment: Globalizing and Organizing, 2012.
- WIEGOc. *Refusing to Be Cast Aside: Waste Pickers Organising Around the World*. Cambridge, MA, USA: Women in Informal Employment: Globalizing and Organizing, 2009.
- WIEGOd. *The Only School We Have. Learning from Organizing Experiences Across the Informal Economy*. Cambridge, MA, USA: Women in Informal Employment: Globalizing and Organizing, 2012.
- Wilson, David C., Ljiljana Rodic, Anne Scheinberg, Costas A Velis, and Graham Alabaster. "Comparative Analysis of Solid Waste Management in 20 Cities." *Waste Management & Research* 30, no. 3, 237-254, 2012.
- Wilson, David, Costas Velis, and Chris Cheeseman. "Role of the Informal Sector Recycling in Waste Management in Developing Countries." *Habitat International*, no. 30: 797-808, 2006.
- World Bank, "Brazil - Brazil Solid Waste Picker Social Inclusion Initiative: P121881, Report ISR 11300," Washington, DC, 2013.
- Zeuli, Kimberly, and Robert Cropp. "Cooperatives: Principles and Practices in the 21st Century." University of Wisconsin, n.d.