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Managing municipal solid waste in Latin America and the Caribbean

Integrating the private sector, harnessing incentives

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As Latin America's urban population has grown, its solid waste has increased at an even faster pace. Today the region's urban areas generate about 369,000 tons a day of solid waste. Ensuring that the waste is collected and disposed of properly will require strengthening the strategic role of municipalities. The private sector already plays a big part in waste collection. But private providers could do more in waste disposal and management, helping to improve service in close coordination with local authorities. Given the methane gas currently released from landfills, carbon finance is another potential driver of management improvements.

Latin America and the Caribbean is the most urbanized region in the world, with its urban population expanding from 61 percent in 1975 to more than 78 percent in 2001. With increasing urbanization—along with economic growth and rising consumption—comes greater waste generation. And the waste will continue to grow: several recent World Bank studies project that the region's municipal solid waste will increase from 131 million tons in 2005 to roughly 179 million in 2030.¹

Protecting public health and the environment in the face of this growing volume of waste will require improved waste management services. Municipal budget allocations for solid waste management, now 2–8 percent of municipal budgets, will probably need to at least double. The private sector, already playing a part, will need to further expand its services to meet the increased demands. And the public sector will need to improve its often inadequate oversight and coordination of these services.

Review of the issues

The region generates about 369,000 tons a day of municipal solid waste—56 percent of it in large urban centers, 21 percent in medium-size ones, and 23 percent in small ones (PAHO 2005).² The total per capita rate of waste generation is about 0.8 of a kilogram a day, though it can exceed 2.4 kilograms a day during peak tourism seasons in some municipalities. The region's large cities have the highest per capita rates of waste generation, and the smaller and poorer settlements the lowest.

Residential waste is typically 50–70 percent of the waste stream. Construction and demolition waste can also account for a large share—as high as 31 percent in Belo Horizonte, for example—though this varies markedly among cities.

Coverage by waste collection services in the region's cities ranges from 11 percent of the population to 100 percent, with a regional average of 81 percent (PAHO 2005). Compared with other regions and similar economies, Latin America has relatively low rates of waste diversion (recycling and composting; see www.worldmap.com, map 308). And it has generally poor, though highly variable, practices for final disposal (box 1).

The predominant means of disposal is through open dumps, with associated health and environmental problems. Management of infectious medical waste and hazardous industrial waste is

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BOX 1**Surveying cities in Latin America and the Caribbean****INSTITUTIONAL ISSUES**

- Lack of legislative framework for integrated management of municipal solid waste
- Lack of integrated management of municipal solid waste systems
- Underfunding of municipal solid waste services
- Lack of effective education programs to encourage source separation of organics and dry recyclables
- Wide variation in service efficiency
- Lack of coordination between national and municipal agencies and objectives

PUBLIC-PRIVATE PARTNERSHIP ISSUES

- Relatively low levels of recycling
- Predominance of informal waste pickers as recycling agents
- Little or no diversion of organics
- Uncertainty in estimating current and future waste generation
- Low participation by private companies in recycling and waste diversion activities
- Significant environmental impacts from unacceptable disposal sites

Source: Golders Associates 2006 and NIPSA 2006.

The private sector already plays a role—but could do more

generally poor; most is simply mixed with municipal waste. Environmentally safe waste disposal (such as in sanitary landfills) is provided for only 23 percent of the urban population.

This brief overview suggests that the first priority in municipal solid waste management in Latin America should be to improve waste collection and controlled landfilling. Greater focus also is needed on source separation of waste. This could begin with the segregation of organics—such as market or horticultural waste—for high-grade composting.

Potential for private participation

Solid waste management offers many opportunities for private sector participation, and there appears to be greater support for private involvement in solid waste than in the highly politicized water sector. Indeed, Latin America already has

a relatively high level of private participation in waste collection (table 1). Opportunities are also plentiful in recycling and in managing nonhazardous industrial waste and construction and demolition waste. Private participation in waste disposal is growing, with related benefits in landfill management and environmental compliance.

Benefiting from small-scale providers

Small community-based organizations (such as cooperatives) and private microenterprises play an important part in providing waste management services in the region. These small-scale service providers offer several advantages, including low-cost, labor-intensive approaches and greater community participation, which encourages better collection and source separation. But while they often provide low-cost services, they may also require more municipal management.

Integrating waste pickers

Informal waste pickers perform most of the recycling in the region, often at dump sites and in the streets. Waste picking in dump sites poses serious health and safety risks and provides little income. Waste picking in the streets may compete with formal collection of recyclables and can disperse waste placed outside for pickup.

Competition between “formal” and “informal” programs is usually counterproductive. Efforts to improve recycling now commonly try to reduce informal waste picking and upgrade pickers into community-based organizations operating with sanctioned routes and separate collection of recyclables. Successful community-based organizations might eventually become independent collection contractors or recycling enterprises fully integrated into the waste management system. Several cities in the region have recently started municipal recycling programs involving small enterprises or cooperatives and numerous sorting stations for dry recyclables.

Upgrading landfills

The number of acceptable landfills in Latin America has increased in recent years, and some of these now meet international standards for sanitary landfill. But in many cases landfills are closer to “controlled dumps.” Around 60 percent of the waste generated in the region ends up in inadequately controlled landfills, or “dumps.”

The United Nations Environment Programme reports that most capital cities and large secondary cities in South America have sanitary landfills (UNEP 2005). Only 11 landfills in Mexico, mostly

TABLE 1**Solid waste management services provided by the private sector in selected Latin American cities, 2005–2006**

(percentage of total)

	Belo Horizonte	La Paz	Lima	Managua	Rio de Janeiro
<i>Collection services</i>					
Residential	78	100	70	1	40
Commercial	78	100	50	1	0
Sweeping	90	100	70	NA	0
Construction and demolition	100	NA	90	NA	100
Industrial	100	100	100	1	100
Recycling	50	100	100	100	38
Landfill	0	100	100	0	100

Source: Golders Associates 2006.

Local policies and market incentives can be key tools in managing solid waste

in the north, are equipped for sanitary landfill operations—and only 15 percent of Mexico’s solid waste is disposed of adequately. Central America (except for Costa Rica) and most Caribbean countries lack acceptable landfills. So do Bolivia, Ecuador, and Peru, except in their capital cities. And so do many medium-size cities across South America, except those in Chile and Colombia.

How landfills are operated can affect recycling rates. In Latin America—in contrast with China, India, Japan, Europe, and the United States—small cities, where the dump sites are small, have higher recycling rates than larger ones, where waste pickers are banned from dumps and have to rely on informal street collection (Golders Associates 2006). Another factor in the region’s lower recycling rates is that private collection contractors and landfill operators are typically paid by the tonnage disposed, so they have no incentive to encourage waste diversion.

Policies and incentives—key tools

Big improvements in solid waste management are possible with the right policies and financial incentives (Walls 2006). A sound legal framework and appropriate tax and subsidy policies can encourage waste reduction and recycling and change the nature of products, alter waste streams, and reduce social costs. Economic policies can promote the use of recycled materials, and purchasing policies can favor products manufactured with them.

While regulations are important, market and financial incentives can be even more effective in modifying public behavior and increasing waste diversion. Responding to market demands,

many worker, municipal, and business associations have formed in the region to develop waste management programs. Well-managed trade associations generally make a positive contribution to the waste management dialogue. Market-based instruments—such as weight- or volume-based disposal fees and collection charges for the industrial, commercial, and institutional sector—can promote waste reduction and recycling.

Building municipal capacity

In many countries central governments need to provide a legislative and institutional framework for addressing national priorities in solid waste management. But it is municipalities that can usually best achieve these priorities, through strategies of integrated waste management that maximize environmental benefits while minimizing overall costs. To do so, however, municipalities often need greater capacity and independence.

In all cities surveyed, constraints on increasing or improving private participation include a lack of municipal capacity to manage contracts and ensure service standards. Often adding to these constraints is a public skepticism about privatization and its association with corruption and lack of transparency—a common concern in Latin America.

But experience around the world shows that involving the private sector in solid waste management can lead to efficiency gains where competition, transparency, and accountability are present. Municipalities can enhance these efficiency gains by introducing well-focused performance objectives, financial and managerial autonomy, hard budget constraints, and clear accountability to customers and providers of capital.

Tapping carbon finance

The release of methane gas from landfills provides opportunities for the sale of emission reductions under the Kyoto Protocol's Clean Development Mechanism. The resulting carbon finance could provide potentially significant economic incentives for improving waste management operations.

The first priority for carbon finance support in solid waste should be landfills—and the second, composting. New areas worth pursuing include recycling and improved collection through such changes as adding transfer stations. Many projects in the region have already been approved for carbon finance, including landfill projects that will involve the capture and combustion of methane and a few composting projects that will avoid methane emissions.

By making relatively modest improvements, municipalities could become eligible for significant carbon finance revenues that could partially offset waste management costs. A recent review by the World Bank estimates potential annual carbon finance revenues per million residents at US\$2,580,000 for landfill gas recovery, US\$1,327,000 for composting, up to US\$3,500,000 for recycling, and US\$115,000 (plus the fuel savings) for transfer stations.³

Still, carbon finance revenues will never exceed around 10 percent of overall waste management costs and should be viewed as performance incentives rather than dedicated revenues. Much uncertainty remains about the long-term availability and acceptability of carbon finance in waste management.

Conclusion

Better solid waste management services in Latin America will depend on municipalities strengthening their role. While municipalities are generally responsible for all matters relating to urban solid waste, those in Latin America tend to focus almost exclusively on collecting waste, cleaning streets and public spaces, and,

at times, ensuring proper disposal. Their role needs to go beyond this, to the integrated management of waste material throughout its life cycle. Municipalities also need to be involved in broader discussions, such as on greater product stewardship by manufacturers and retailers.

The private sector is active in some areas, notably in collection. But there are opportunities for greater involvement as long as local authorities ensure sound integrated management and enforcement. The availability of carbon finance could also help drive improvements in waste management services.

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Notes

This note summarizes several recent World Bank reports, including a PPIAF-supported review of the private sector's role in the region's waste management sector (Golders Associates 2006; NIPSA, IBERINSA, and Universidad de Cantabria 2006; Walls 2006).

1. Municipal solid waste includes residential, industrial, commercial, institutional, and construction and demolition waste as well as municipal services waste (street sweepings, drain cleanings, yard waste). All tonnes given in the note are metric tons.

2. Large urban centers are those with more than 500,000 inhabitants; medium size, between 100,000 and 500,000; small, less than 100,000.

3. These estimates assume an emissions reduction sale price of US\$5 per ton of avoided carbon dioxide equivalent. A more thorough analysis would be needed if two or more, potentially competing, options are selected.

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