Living without sewage in Latin America
The Business of Collecting Fecal Sludge in four Latin American Cities

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INTRODUCTION

Following the Cali Declaration1, the World Bank’s Water and Sanitation Program (WSP) has undertaken studies to deepen and broaden existing knowledge and understanding of sanitation in peri-urban and rural areas across the Latin American region.

This is a summary of the Saneamiento in situ en América Latina report2 (World Bank’s Water and Sanitation program, October 2011), which aims to contribute to the regional water and sanitation debate on multi-purpose sustainable solutions by synthesizing four city case studies on the supply and demand of waste collection and disposal of fecal sludge in peri-urban areas of Guatemala City (Guatemala); Managua (Nicaragua); Santa Cruz (Bolivia); and Tegucigalpa (Honduras).

The four cities analyzed in this study are fundamentally important to the development of their countries, because they are important centers of trade, industry and services, and in three of the cases are the largest urban centers of their respective countries. Yet, their peripheries are characterized by on-site sanitation systems such as latrines and toilets without drainage. These systems are not subject to systematic maintenance or cleaning of excreta and fecal sludge. Consequently, it is common to see fecal sludge drain through the streets. Also, collected sludge is discharged without appropriate safety precautions for workers, community members and the urban environment.

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1 Where 17 Latin American countries committed to the inclusion of sanitation in their political agendas as a priority and main poverty-reduction strategy.
2 A complete list of references can be found in the full report.

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KEY FINDINGS

• Large urban centers pose several challenges to water and sanitation providers, one of which is developing methods of disposing of fecal sludge that are more efficient and appropriate to end-users as well as members of other related sectors (for example, farmers).

• Conventional sanitary solutions are perceived as permanent, while on-site sanitation solutions are perceived as temporary. If this perception is not challenged effectively, the quality and coverage of the collection of fecal sludge in peri-urban areas will not improve.

• If not properly managed, conventional on-site sanitation solutions can cause pollution and severe health problems. This study suggests a critical need for policies and practices that strengthen peri-urban sewage disposal.

• Most companies engaged in the collection and disposal of fecal sludge are family businesses that have not developed economies of scale. It is therefore necessary to develop alliances between governments, local companies and cooperation agencies to increase efficiency and professionalism.

• More than 12 million people could benefit from the strengthening of public policy that addresses non-networked sanitation solutions in these four countries.

• A fair regulation of related services and charges is crucial to improving the current standards.
The study was enhanced by interviews and focus groups with numerous strategic partners (for example, national, regional and local government representatives working on the provision of water and sanitation services).

The context

The four countries included in this study account for more than 36 million people. In each of these four countries, we find between one-quarter and one-third of the population living with less than US$2 a day. While the average Human Development Index score and GDP per capita rate in Latin America and the Caribbean are 0.82 and US$10,000, respectively, for the four participant countries, these two indicators range between 0.70 and 0.73, and US$2,570 and US$4,500, respectively.

Chart 1 shows three of the most common sanitation solutions: sewerage networks; septic tanks, and improved dry latrines, in addition to aggregated levels of access to improved sanitation. Of the four countries represented in this study, access to sewerage networks in urban areas ranges from approximately 40% to 70%. Showing that a percentage of the urban population is therefore connected to other basic sanitation solutions.

The chart also shows that the largest deficits are in Bolivia and Nicaragua, where more than 40% of people do not have access to improved sanitation. The challenge is not only for these two countries. In total, more than 12 million people, from these four countries, could benefit from the strengthening of public policy that addresses non-networked sanitation solutions.

Cleaning, collection and disposal of fecal sludge have not been subject to regulation in these four countries. In the last few years, however, the following two have shown significant progress:

- Bolivia: The water and sanitation regulator started operations in 1997. In 2009, the 0071 Supreme Decree created the new Regulatory Authority for Water and Sanitation (AAPS), which embraces a progressive model of regulation and social participation. Although the Decree does not authorize the regulation of drinking water and sanitation, it prepared the ground for the 2010/2010 Administrative Resolution, which states: (a) that fecal sludge service providers must obtain authorization from the AAPS; (b) charges for fecal sludge treatment received from tank trucks must be approved by the AAPS; and (c) drinking water and sanitation service providers must submit a plan for the disposal of fecal sludge. In addition to enforcement, however, there remain important uncertainties and gaps in environmental and industrial safety for the proper management and disposal of sludge.

- Guatemala: The 236/2006 Governmental Agreement sets maximum limits for wastewater discharges into receiving bodies, such as sanitary sewers, and sets provisions for the disposal of fecal sludge. In order to commercialize the sludge, the document states that it is mandatory to obtain authorization from the Ministry of Environment, as well as to (a) comply with weight limits; (b) collect sludge in appropriate containers and vehicles to prevent leaks and spills; (c) conduct sampling of collected sludge; and (d) avoid the disposal of sludge in sewers, surface water and groundwater. This agreement also prohibits the disposal of sludge as a fertilizer for edible crops that are consumed either raw or cooked without conducting a thorough disinfection.

Finally, it is worth to address that sewerage coverage is well below drinking-water coverage in three of the four cities: Santa Cruz (40% versus 95%); Guatemala City (87% versus 90%); Tegucigalpa (70% versus 80%); and Managua (39% versus 84%).

Marketing mix

Below are details of differences and similarities between the cities in four critical areas of peri-urban sanitation:

- Product: The cleaning of septic tanks and dry and conventional latrines takes place through suction. The process involves the transfer of fecal sludge in sealed tanks (storage capacity ranges from 2.5 to 10 cubic metres). This study revealed that each company runs up to five transfers a day. The process finishes with the discharge into the sanitary sewer system or wastewater treatment plant.

- Disposal: In Managua and Santa Cruz, the majority of fecal sludge is disposed of in treatment plants. However, authorities do not know where up to 40% of all fecal sludge ends up. To some extent, this is a reflection of the fact that half of companies operate in the informal economy.

- Price: In all four cities, the price is self-regulated by the market. However, prices are shaped by two critical factors: coverage and personalized pick-up, for example, which increases operative costs.

- Ratios of minimum cost of latrines to monthly family income is 0.96 in Tegucigalpa, 1.05 in Guatemala City, 1.12 in Managua, and 1.17 in Santa Cruz.

- In Managua and Tegucigalpa, the cost of sewerage services is particularly low: a family with on-site sanitation pays between five and fifteen times more than a family connected to the sewerage network.

- Place: Fecal sludge collection takes place in areas where there is no sewerage system. Most of the time, this corresponds to peri-urban areas, where control of appropriate sanitation conditions is poor or non-existent.

Most end-users are households, although, some are shops and even industrial users. It is worth noting that an important proportion of those end-users are wealthy households, in Guatemala City and Managua, for example, these represent 15% of the total market.

- Promotion: There is a wide range of promotional activities. However, the vast majority of service providers rely on traditional media (for example, TV announcements, billboards and posters). Only a few service providers use internet and truck banners.

Since in all four cities latrines and septic tanks tend to be near homes, consumers were asked whether they could regularly detect unpleasant odors. As noted in Chart 2, Santa Cruz and Managua proved to be the extreme cases. This may be explained by the use of ventilated latrines. The research also suggests there is a critical need for more sewage disposal education.

Consumer opinions and perceptions

85% of interviewees reported a lack of punctuality among providers of septic tank cleaning services and collection of fecal sludge. This is of concern, because it forces end-users to wait for several hours, sometimes days, at home. This unpredictability in service, ranging from hours to days, is a consistent part of the poor quality of service that is provided.
The potential for supply and demand

The demand for these services is highly inelastic, because they have a captive market that depends on supply, which is exacerbated by poor household sanitation infrastructure. This deficient infrastructure leads to more diluted sludge and more infrequent collection. Demand is also determined by (a) the ratio of price to end-user earnings; (b) the presence of new latrines or septic tanks, which postpones the need for these services for two-to-three years; (c) the possibility of replacing old septic tanks with new ones; (d) the public and imprecise information and (e) poorly trained septic tank cleaners.

Supply is very different across these four Latin American cities. In Tegucigalpa, collection services focus on high- and middle-income neighborhoods, as well as companies and industries. In Guatemala City and Managua, collection companies provide other services, making sludge collection a complementary activity. In contrast, in Santa Cruz fecal sludge collection is the main business activity. However, the study came across commonalities in all four cases, which indicates the potential for the supply of efficient fecal-sludge management, including in peri-urban neighborhoods with greater environmental awareness and pro-sanitation policies. Emphasis must be placed on standards of service, better health education campaigns, use of fecal sludge in agriculture and sales regulations.

RECOMMENDATIONS

- Harmonize water and sanitation, environmental and public health policies to improve and better disseminate practice standards.
- Develop management models and public-private-partnerships (PPPs) for the development of peri-urban sanitation solutions.
- Be specific with regard to regulations. Collector trucks, for example, should meet the following requirements: (a) certain size, tare weight, capacity and color; (b) carry a first-aid kit, including an oxygen tank; (c) have a direct line of communication with headquarters; (d) carry maintenance certification; and (e) be driven by a professional driver.
- Develop a subsidy payment program and establish maximum charges for the removal of fecal sludge in peri-urban and low-income neighborhoods.
- Strengthen culturally appropriate health education programs.
- Build local capacities of different stakeholders, both to implement and to enforce the above-mentioned regulations, as well as to improve managerial, safety and marketing skills.