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**Solid Waste Management in Greater Santo Domingo, Dominican
Republic**

**APPROVED BY
SUPERVISING COMMITTEE:**

Supervisor:

Bjørn Sletto

Robert Wilson

**Solid Waste Management in Greater Santo Domingo, Dominican
Republic**

by

Brent Wallace Perdue, BA

Thesis

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Science in Community and Regional Planning

and

Master of Public Affairs

The University of Texas at Austin

May 2017

Acknowledgements

I would first like to thank the staff members of the Fundación de Saneamiento Ambiental de La Zurza for their willingness to allow me to work with them over the summer. In particular, I would like to thank Nicolas Mendoza and Robinson García Silfa for their kindness, hospitality, and hard work. I would also like to thank the residents of Los Platanitos for their generosity and diligent efforts to improve their community. I would like to acknowledge the assistance of the civil society and local government officials with whom I worked in Santo Domingo. In particular, Juan Torres helped me get settled for the summer in Santo Domingo. At The University of Texas at Austin, I would like to thank Dr. Bjørn Sletto and Dr. Robert Wilson for supervising this thesis and for supporting my professional development in solid waste management. In addition, I would like to thank the Robert Strauss Center for International Security and Law's William H. Crook Program in International Affairs for internship support. I would like to thank the Environmental Research and Education Foundation for support during two years of graduate studies. Finally, I wish to thank the National Science Foundation for funding provided under the International Research Experience for Students (IRES) grant awarded to Dr. Bjorn Sletto, which provided generous support for my research training and independent thesis research.

Abstract

Solid Waste Management in Greater Santo Domingo, Dominican Republic

Brent Wallace Perdue, MSCRP/MPAff

The University of Texas at Austin, 2017

Supervisor: Bjørn Sletto

Inadequate solid waste management is common in informal settlements across much of Latin America. In informal settlements, solid waste accumulates in empty lots and clogs channelized creeks, provoking public health risks and environmental degradation. In addition, inadequate solid waste management creates public health and environmental quality negative externalities that impact all citizens. In the metropolitan region of Santo Domingo, Dominican Republic, features of neoliberal urban governance impact solid waste management service provision. Decentralization, territorial division, and the retreat of the state simultaneously create challenges and opportunities for solid waste management in formal and informal settlements. I argue that these neoliberal urban governance features lead to improved conventional solid waste management in formal sectors of Santo Domingo municipalities, but hinder adequate solid waste management in informal settlements. Often, Santo Domingo municipal authorities attempt to apply conventional solid waste management techniques, such as dumpster collection, in informal settlements. But, geographic features, infrastructure deficiencies, and citizen behaviors limit the success of

conventional solid waste management approaches in informal settlements. Throughout Latin America, and in one Santo Domingo municipality, alternative solid waste management models are more effective at adequately managing solid waste in informal settlements. This work analyzes the impacts of neoliberal urban governance on solid waste management in the formal and informal settlements of Santo Domingo. Then, the work examines the opportunities and challenges of alternative solid waste management in Santo Domingo informal settlements. My results show that networked civil society can leverage neoliberal urban governance features to create effective alternative solid waste management models in Santo Domingo. The existing alternative solid waste management model in one Santo Domingo municipality can be replicated in other Santo Domingo municipalities to improve solid waste management in informal settlements and reduce the negative externalities that impact all citizens of Santo Domingo.

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Chapter 1: Introduction

Rapid urbanization coupled with rising standards of living is increasing waste production globally, including in Latin America (Abarca Guerrero, Maas, & Hogland, 2013), making it difficult for municipal administrations to provide adequate solid waste management services to their growing urban populations. This is particularly true in informal settlements (Abarca Guerrero et al., 2013), which now represent 33 percent of the urban population in developing nations (UN-Habitat, 2013).

In the Dominican Republic, UN-Habitat has estimated that 14.8 percent of the urban population lives in slums (UN-Habitat, 2013). These informal settlements share characteristics that limit traditional solid waste management services and further expose residents to environmental and health hazards (See Figure 1.1). Steep slopes, deficient transportation infrastructure, irregular land use patterns, and citizen behaviors all combine to inhibit conventional solid waste management techniques, such as the use of large compactor trucks for collection. In addition, neoliberal governance features, such as decentralization of governance functions, territorial division of governing jurisdictions, and the retreat of the state further complicate solid waste management in informal settlements.



Figure 1.1: Solid Waste Accumulation in Channelized Creek in Los Platanitos

Source: Author, 2017

Without adequate solid waste management services, residents in informal settlements often resort to disposing of solid waste in empty lots and waterways. This inadequate management of solid waste provokes location-specific problems in informal settlements, such as persistent waste accumulations that degrade environmental quality and serve as breeding grounds for disease-carrying vectors. Furthermore, these location-

specific problems are not confined to areas with such waste accumulations. Broader negative externalities of public health risks and environmental degradation impact all residents within a region. These negative externalities are not accounted for by governing authorities and costs are borne by citizens at-large.

Neoliberal governance approaches have often exacerbated the lack of adequate solid waste management in informal settlements (Sletto, 2014; Mendoza, 2014). The decentralization of governance from federal authorities to municipalities is typically irregular and incomplete, creating geographically uneven governance capacities and capabilities. In addition, territorial division of jurisdictions creates fragmented planning and policy implementation, resulting in varying levels of municipal resources and political will to carry out governance functions. In addition, neoliberal governance is often characterized by a retreat of the state from its traditional responsibilities of direct provision of public services. Instead, the state looks towards citizens and the private sector to become active participants in public service provision. The so-called discourse of “responsibilization” (Sletto and Nygren, 2016) of citizens coupled with privatization of public services is operationalized through neoliberal governance strategies, such as participatory budgeting and public-private partnerships.

Yet, in Santo Domingo, Dominican Republic, the retreat of the state, coupled with the limitations of decentralization and territorial division, has created uneven and incomplete public service provision despite participatory governance efforts. Many communities lack solid waste services entirely, or the service provided is spatially or socially inappropriate: privatized solid waste management utilizes conventional means of

solid waste collection with large compactor vehicles that require wide streets for operation and to maintain profitability, an operational model that does not translate well to informal settlements. However, residents in informal settlements and their partners in civil society organizations are not without agency and, at times, they organize to provide critical solid waste management services. Networked, hybrid civil society organizations leverage available state resources to fulfill critical public services for community benefit. In fact, such organizations have developed alternative solid waste management models in some informal settlements in the Santo Domingo metropolitan area.

This study seeks to understand how solid waste management in informal settlements operates within the neoliberal urban governance context of Santo Domingo. The qualitative study explores current solid waste management planning, policies, and practices through document analysis, interviews, and site visits. In addition, the study examines existing alternative solid waste management programs in Santo Domingo, focusing on their relationship with the state, their organizational development, and their program services. I am particularly concerned with identifying barriers and opportunities to adequate solid waste management in informal settlements. I argue that existing alternative solid waste management models in Santo Domingo and similar Latin American cities offers public-private partnerships models suitable for the sort of neoliberal urban governance frameworks operating in Santo Domingo. When appropriately tailored, these partnerships may create hybrid organizations that navigate between roles as community organizations and service providers, as well as governance collaborators and critics.

SANTO DOMINGO, DOMINICAN REPUBLIC

The Dominican Republic is an urban nation, with 63 percent of the population residing in urbanized areas. The metropolitan area of Santo Domingo, which is home to approximately three million people, or one third of the total urban population (Torres, 2014), spreads over 1,000 square miles. The Dominican Republic is a middle-income developing nation with economic growth occurring in the telecommunications, tourism and export-oriented sectors, with many residents commuting to the centrally located Distrito Nacional for employment, education, commerce, and services. Despite rising standards of living on average, economic inequality, as well as political and social marginalization, persists for the 32 percent of the population that lives in poverty (Torres, 2014).

As the national capital and commercial center, Santo Domingo has long attracted migrants seeking economic opportunities from underdeveloped rural areas. Many of these rural in-migrants responded to the lack of housing stock and low purchasing power by constructing informal housing in areas unsuitable for development. Precarious housing made from cardboard, sheet metal, and cinderblocks was developed in floodplains, along steep slopes, and along major transportation corridors. Two major rivers, the Isabel and Ozama, and numerous creeks run through the Santo Domingo region towards the south central coast of the Dominican Republic, and informal settlements line long stretches of these rivers and creeks. It is estimated that 75 percent of Santo Domingo's housing stock is informally developed and that 50 percent of the population lacks title to the land upon which their residences were built (Torres, 2014). In these informal residences, 35 percent lack clean tap water and 22 percent lack indoor plumbing and as a result, black water flows

into inadequately engineering urban drainage ways clogged with household solid waste (Torres, 2014).

In the late 1990s and early 2000s, the Dominican Republic underwent a series of governance reforms that decentralized governance functions from the federal government to municipalities across the country. Due to those reforms, municipalities are vested as the primary public service providers in their respective jurisdictions. In addition, the Santo Domingo municipality was jurisdictionally divided into five separate municipalities. The Dominican Municipal League and Dominican Municipal Federation are now charged with regional coordination between the municipalities (República Dominicana, 2007). However, the federal government retains sole property, sales, and income taxation authority limiting the ability of municipalities to raise funds for public service provision.

Indeed, municipalities have long struggled to provide adequate solid waste management services. The Santo Domingo region produces approximately 3,500 tons of solid waste every day or 0.90 kilograms per inhabitant per day, which is at the upper limit of developing nations' average daily per capita waste production between 0.60 and 0.90 kilograms (Pan-American Health Organization, 2003). Municipalities turned to the private sector for solid waste management with varying degrees of success and failure. While solid waste management has improved, particularly in formal and informal neighborhoods of the Distrito Nacional, irregular dumping of waste and waste accumulations in empty lots and waterways is still pervasive in informal settlements of the more recently established municipalities that fringe the Distrito Nacional, including Santo Domingo Norte.

CASE STUDY

Because of these stark differences in solid waste management approaches between the Distrito Nacional and Santo Domingo Norte, they provide a useful case study of the implications of uneven neoliberal governance on solid waste management in rapidly growing metropolitan areas in the Caribbean and Latin American region. These two municipalities are separated by the Isabel River but share a common ecological region and solid waste infrastructure. On the Distrito Nacional-side of the Isabel River, six community organizations sweep, collect, and process solid waste every day in informal settlements with the support of international organizations and an on-going municipal contract. Across the Isabel River in Santo Domingo Norte, informal settlements struggle with persistent waste accumulations in empty lots and waterways that provoke public health risks and environmental degradation.

Ultimately, I believe that ensuring adequate solid waste management for all urban residents is the responsibility of the state. Solid waste management can be considered as a public good that is not adequately served by the private sector. Furthermore, inadequate solid waste management creates negative externalities, the costs of which are not accounted for by the government but in fact borne by private citizens. At the same time, I believe that the private sector's focus on efficiency can improve governmental services. While my thesis does not address the broader question of the neoliberal state's shift away from directly providing public services, I argue that it is the state's responsibility to ensure adequate solid waste management service provision, whether this is true through direct public provision, public-private partnerships, and/or privatization. On this account, Santo

Domingo Norte is not meeting its obligation to ensure adequate solid waste management for all residents. On the other hand, Distrito Nacional with its community partners have developed a model of successful public-private partnerships specifically tailored to the needs of informal settlements. This study, then, will seek to understand the barriers and opportunities to expanding this model across the greater Santo Domingo region by addressing the research questions, What are the governance, policy, and institutional structures that support alternative solid waste management models; and What are the obstacles and opportunities for implementing alternative solid waste management models in informal settlements of Santo Domingo Norte?

METHODS

To address my research questions, I developed a case-study-based research design utilizing mixed research methods. Prior to researching the case studies, I sought to understand the governance structures and features that promote or inhibit alternative solid waste management. The first case study sought to analyze how informal settlements manage solid waste without municipal support, nor quasi-public solid waste management institutions. The second case study allowed me to understand how quasi-public institutions function as organizations and service providers. By contrasting the two case studies, my mixed research methods approach illuminated the similarities and contrasts between informal settlements with and without alternative solid waste management activities and organizations. I was able to draw conclusions about barriers and opportunities to alternative solid waste management in informal settlements based on the case study results.

I used four qualitative research methods to address my research questions. First, I performed a comprehensive review of solid waste management information regarding Santo Domingo. This document review included media reports, non-governmental organization reports, governmental reports, and federal and municipal statutes and policies. Second, I conducted twelve semi-structured interviews with community solid waste management service providers, private sector service providers, and government officials. My interview questions sought to understand the current solid waste management landscape and identify barriers and opportunities for improved solid waste management in informal settlements. In addition, the interviews were intended to confirm, deny, and, in general, enrich my understanding of solid waste management based on my document review and site visits. Third, I visited community solid waste management organizations to observe their operations firsthand to gain an understanding of field operations. Finally, I had the opportunity to intern with a community solid waste management organization through the Strauss Center's Crook Fellowship program. While a distinct project, my internship afforded me the opportunity to conduct a performance audit and deliver a consultation report of the organization's solid waste management operations. The internship experience gave me the opportunity to gain significant insight into the organization's model and operations.

To obtain access to representatives from the public, private, and non-governmental sectors for my interviews, I built upon my preexisting relationships established during my participation in the graduate field course, Dominican Republic Practicum. My interview questions sought to gain an understanding of current solid waste management practices and

policies from the perspectives of government officials, private sector service providers, and non-governmental service providers and advocates. I also probed interview participants' perceptions of alternative solid waste management models that could supplement conventional approaches. While I prepared semi-structured interview questions and I strove to cover similar topics, each interview took on a character of its own over the course of the interview conversation. The interview process is limited in its replicability due to the exploratory nature of the interviews. I anticipated identifying governance and organizational challenges and opportunities for adequate solid waste management. I hope my study will contribute to the body of academic literature exploring various alternative solid waste management models in Latin American informal settlements.

POSITIONALITY

This study is informed by my professional background in solid waste management. For seven years, I directed a non-profit organization that provided landfill diversion services for Austin, Texas residents and small businesses. Ecology Action operated a drop-off recycling center that accepted and processed paper, plastic, metal, glass, organic waste, and hard-to-recycle items, such as electronics, batteries, and textiles. Ecology Action sold recyclables to sustain the organization, as well as contracted with the City of Austin for the service provided to citizens and businesses. During my time at Ecology Action, I deepened my commitment to landfill diversion and zero waste management. The organization shares some similarities with the community organizations working in the Distrito Nacional. Both models offered solid waste management services traditionally in the service domain of the state and negotiated this relationship as the work was performed.

I had the opportunity to further explore my interest in solid waste management during the Dominican Republic Practicum course offered by the program in Community and Regional Planning at the University of Texas at Austin. Practicum courses are designed as academic-year long professional research projects that emphasize collaboration between students and hands-on fieldwork. During the practicum, I had the opportunity to work on the solid waste management team in the informal settlement community in Santo Domingo Norte called Los Platanitos. Los Platanitos is typical of informal settlements across the region in terms of its location in a floodplain along steep slopes, high poverty levels, precarious housing stock, deficient infrastructure, and a lack of adequate solid waste management (Sletto, 2014). Prior to settlement, Los Platanitos was a dumpsite where surrounding communities disposed of household waste, as well as construction and demolition debris. In the 1980s, the first settlers covered the waste with soil and inert materials and built informal housing over the dumpsite. Los Platanitos is now home to between 1,500-2,000 residents crowded into dense, precarious housing stock. Narrow alleys and crumbling staircases connect the community with a more consolidated residential area, where municipal dumpsters are available for household waste disposal. However, the steep slopes, deficient transportation infrastructure, and residents' behaviors contribute to widespread solid waste disposal in empty lots and the creek waterways. Direct dumping into creeks and storm water channels consolidates waste accumulations, clogging the flow of water of deficiently engineered drainage creeks. Plastics, organics, and fecal matter all stagnate in the creeks creating public health risks and environmental degradation.

Los Platanitos residents are aware of the detrimental impacts of inadequate solid waste management and want to improve the situation. Our class team sought to work with interested residents to develop a community-based solid waste management initiative in Los Platanitos. We surveyed residents regarding their solid waste management behaviors and perceptions of solid waste management. We also worked with residents to develop an environmental awareness messages that would encourage environmental stewardship through solid waste management. I found the process to be rewarding, in particular establishing personal relationships with community members. But, I was frustrated by the lack of governmental support to improve solid waste management. At times, I found myself desensitized to the pervasive trash accumulations and then angry at the lack of government action to assist people living in such squalid conditions. The practicum focused on building individual and community capacity for organizing, but due to resource limitations we did not develop a sustainable solution for solid waste management. At times, I was frustrated with the incremental nature of social change and sustainable development.

My study is also limited by time constraints and my position as an external observer. Whereas I worked to understand the social, political, and economic context of solid waste management in Santo Domingo, as a foreigner with limited time I will not be able to fully understand the local context. In addition, there were times when I found myself wanting to apply solid waste management paradigms that have been developed in the context of United States municipalities. Those perspectives can be helpful, but not always appropriate or directly transferable to informal settlements in Santo Domingo.

STRUCTURE OF PAPER

In the following chapter I will discuss the theoretical framework of neoliberal urban governance used to analyze the overarching context in which solid waste management occurs in Santo Domingo. Three features of neoliberal urban governance inform my analysis: decentralization of governance from federal to municipal authorities, territorial division of municipalities, and the retreat of the state from direct public service provision. Chapter 3 will review solid waste management paradigms, including conventional paradigms, integrated solid waste management approaches, zero waste philosophy, and alternative solid waste management models in Latin America. Chapter 4 will discuss my findings regarding solid waste management governance in Santo Domingo, including institutions, planning, policy, and practice. Chapter 5 will explore my findings regarding alternative solid waste management models in informal settlements of Santo Domingo, such as the community organizations of the Distrito Nacional and emerging efforts in Los Platanitos. Lastly, Chapter 6 will discuss various tensions in my findings, as well as the challenges and opportunities of alternative solid waste management in Santo Domingo informal settlements.

Chapter 2: Neoliberal Urban Governance

INTRODUCTION

Neoliberalism is a political and economic philosophy focused on market liberalization reforms. Neoliberalism may be most associated with economic and political reforms promulgated by international financial institutions, such as the World Bank and International Monetary Fund. Typically proscribed for developing nations undergoing economic crises, neoliberal economic reforms often require reduced public spending, reformed governance business processes, and increased public participation in exchange for international financial institution loan packages. Neoliberalism also shapes aspects of urban governance, such as intergovernmental relations, public service provision, and citizen participation. In my thesis, I am specifically concerned with how neoliberal urban governance impacts solid waste management in the informal settlements of Santo Domingo.

I focus my analysis on three features of neoliberal urban governance that are common in many Latin American urban areas: decentralization, territorial division, and the retreat of the state. Decentralization involves the devolution of governance functions from federal and state institution to municipal authorities. The governance rationale is that lower levels of governments are closer to citizens and thus better equipped to provide public services. Territorial division of governing units may also accompany decentralization in order to rationalize jurisdictional authority. Finally, neoliberal urban governance can be characterized by a retreat of the state from its traditional public service provision responsibility through strategies of privatization and a discourse of responsabilization. That

is to say, the retreat of the state is expressed in governance discourses that place the burden of public service on citizens and is operationalized through specific public policy decisions, such as privatization.

In the view of scholars who take a critical approach to political economies, neoliberalization is a process “to re-establish the conditions for capital accumulation and to restore the power of economic elites” (Harvey, 2005). Yet, neoliberalization is often accompanied by discourses of participation that make promises to citizens of reformed governments, economic growth, and improved public service delivery (Goldfrank, 2009). While neoliberal urban governance takes on similar characteristics across Latin America, this process takes different forms based on place-specific contexts (Brenner, 2010). There is significant discussion regarding whether or not the process and impact of neoliberal urban governance is beneficial to marginalized citizens, but I am not taking a normative stance on the appropriateness or effectiveness of neoliberal governance reforms. Rather, I am concerned with the effectiveness of solid waste management in the informal settlements of Santo Domingo operating within an overarching neoliberal urban governance framework.

NEOLIBERAL URBAN GOVERNANCE FEATURES

This thesis will focus on three features of neoliberal urban governance: decentralization, territorial division, and retreat of the state. Neoliberal urban governance is articulated as a governance discourse and produces institutional, planning, and policy consequences. Perhaps most significantly, neoliberal urban governance reforms involve a theoretical shift from *governing* to *governance*. Governing is an active act of governments

assuming responsibility for its part of the social contract through direct public service provision and political representation. Under a governance framework, however, governments are reducing their role as direct public service providers in favor of roles as facilitators of political representation and regulators of private and civil sector involvement in governing (Ahmed and Ali, 2004). This theoretical and philosophical shift also has specific institutional, planning, and policy impacts on society.

Decentralization

Governance decentralization may be defined as the devolution of governing power, planning, and public service provision from the federal executive branch to state and municipal executive branches (Mendoza, 2014). Through the 1950s to the 1980s, Latin American countries developed stronger central government authority while restricting the power of lower levels of government (Blair, 2000). In addition, power relationships between levels of governments, as well as citizens, was often based on clientelism. In order to control the population, governments doled out resources to residents who returned the favor at the ballot box. Furthermore, heavy borrowing in the 1970s and 1980s restricted the ability of central governments to invest in meeting the growing demand for urban infrastructure (Rondinelli, 1990). Neoliberal urban governance reforms attempted to mitigate these issues through the process of decentralization, with varying degrees of success.

As one of the fastest urbanizing regions in the world, Latin American municipalities struggle to obtain an adequate resource base to face the challenge of growing populations and demand for services (Olley, et. al, 2014; Ramos, et. al., 2012; Yousif and Scott, 2007).

In response to these pressures and international financial institutions' loan conditions, Latin American federal authorities have pursued various strategies of governance decentralization. Decentralized governance is intended to reduce bureaucratic overhead, while smaller governance units are theoretically more responsive to citizens' local needs (Bardhan and Mookherjee, 2006; Blair, 2000). However, while accountability, efficiency, and equity in public service provision is supposed to improve, decentralized governance institutions is also subject to capture by local elites (Bardhan and Mookherjee, 2006). Governmental capture by local elites steers public service provision towards special interest groups, which may deprive the poor of service provision (Bardhan and Mookherjee, 2006). Indeed, Bardhan and Mookherjee argue that decentralization improves service provision, but “only for those who can pay” (Bardhan and Mookherjee, 2006). To improve accountability, decentralized local governing authorities often institute participatory processes to be “more responsive to citizen desires and more effective in service delivery” (Blair, 2000). However, accountability structures and processes may not be entirely effective at representing the interests of the most marginalized citizens of urban areas (Swyngedouw, 2005; Torres, 2014).

While many authors agree that the process of urban neoliberalization is uneven and place-specific, Geddes (2014) argues that urban neoliberal reform potentially shapes the local state in three ways: through the democratization of local governance, the creation of alternative governance structures and practices, and the “refounding” of the state, including at the local level (Geddes, 2014). Democratization of local governance often occurs through participatory structures and processes, such as participatory budgeting processes

(Geddes, 2014). Alternative governance structures and processes are created through mechanisms such as neighborhood associations and community consultation boards that operate parallel to local governments in order to organization participatory governance processes (Geddes, 2014). ‘Refounding of the state’ may take the form of a new constitution which impacts the territorial structure of local governments (Geddes, 2014).

As neoliberal reforms are instituted in urban areas, municipalities often do not have the administrative nor financial capacity to manage increasing demand for infrastructure services (Rondinelli, 1990). Central governments view administrative and financial decentralization as a way to improve service provision and lessen the financial burden on central governments attempting to manage national debt payments (Rondinelli, 1990). As service provision responsibilities are devolved to lower levels of governments, municipalities are faced with the need to increase revenues and more effectively manage expenditures (Rondinelli, 1990). However, in most developing countries, decentralization occurs without a concomitant devolution of financial authority (Bardhan and Mookherjee, 2006). The World Bank offers guidelines to municipalities to finance public services, such as “self-financing and cost recovery, cofinancing and coproduction, expansion of municipal general revenues, intergovernmental transfers, and expansion of municipal borrowing capacity” (World Bank). Bardhan and Mookherjee outline three municipal financial systems common in developing countries: “complete fiscal autonomy for local government involving unrestricted local taxation, local financing authority restricted to user fees, and absence of any local revenue raising ability, rather fiscal grants from a central government” (Bardhan and Mookherjee, 2006).

But, Rondinelli cautions that the most important task prior to expanding municipal revenue generation is increasing the administrative capacity of municipal governments to manage budgets and provide services (Rondinelli, 1990). Rondinelli offers four types of actions to strengthen municipal administrative capacity: “grant municipal governments the authority to organize themselves more effectively to raise and manage the revenues needed to finance urban services and infrastructure, training and tech assistance for municipal planning and management capacity, creation of new incentives to increase local revenue collections, and reduction service provision costs and more effective management of expenditures” (Rondinelli, 1990).

In summary, decentralization is an attempt to combine the economic growth that neoliberalism seeks with “social inclusion” through modernization of municipal government structures and processes (Geddes, 2014). In the end, a decentralized, modern municipal seeks to more effectively delivery public services while including citizens through participatory structures and processes (Geddes, 2014).

Territorial Division

However, decentralization is often partial, incomplete, and fragmented due to under-resourced national and municipal governments. Simply stated, it is difficult to reorganize a country’s governance structure, particularly when municipal administrative capacity is underdeveloped and municipal financial authority is restricted. Furthermore, neoliberal urban governance does not address fundamental power imbalances and social inequalities. Those with vested power are often involved in the process of reform and may implement reforms in ways that may negate social justice. In this dialectic between social

justice and power, networked actors are presented with barriers and opportunities for improved governance and claims for social justice.

Compounding this partial decentralization and fragmented policies are the attempts to ‘refound the state’ through modern constitutions, participatory processes, and a popular vote (Geddes, 2014). New constitutions often reorganize the territorial structure and organization of the state, (Geddes, 2014), including redrawing governance jurisdictions. As decentralization devolves governance authority to lower levels of government, territorial divisions create governance jurisdictions that correspond with geographic areas in which governments can theoretically provide appropriate and adequate service suited to local citizen needs. In rapidly urbanizing Latin American cities, with a proliferation of informal settlements, large urban areas are often divided into smaller municipalities. The rationale is that smaller governance units can more adequately meet the needs of citizens (Bardhan and Mookherjee, 2006). However, in the context of underdeveloped municipal resource bases, new municipalities may struggle to find the financial, technical, and human resources to manage participatory processes and public service provision (Torres, 2014).

While territorial division may rationalize the geographies of governance jurisdictions, many public environmental and infrastructure services do not respect jurisdictional boundaries. Water, wastewater, and solid waste all share public good characteristics and negative externalities stemming from environmental degradation that crosses jurisdictional boundaries. Furthermore, public infrastructure designed to manage environmental services is often shared by multiple jurisdictions. However, in Latin

American developing countries, regional governance structures are underdeveloped and this limits the possibility for regional planning.

The Retreat of the State

Neoliberal urban governance is based on the assumption that the state should retreat from traditional forms of political representation and public service provision in favor of more participatory forms of representation and decision-making in order to improve municipal governance. But, power imbalances and other inequalities between different social groups may leave the most vulnerable citizens out of the “progress” of governance reforms (Torres, 2014). At the same time, however, networked actors may leverage the gaps that appear in this partial, fragmented, and incomplete retreat of the state. I am particularly interested in how the retreat of the state, decentralization, and territorial division may be leveraged by civil society to improve solid waste management in the informal settlements of Santo Domingo.

Privatization

Privatization involves the participation of the private sector in the provision of public services. Electricity, water, and waste management are often provided by the public sector in order to ensure universal service, mitigate negative externalities, and improve market failures. However, Latin American municipalities struggle to provide adequate basic service to all citizens. Privatization has therefore been pursued as a market-based approach in order to improve such services. Although critics claim privatization does not improve public service provision and therefore is merely an opportunity for private sector profits, there remains a real need for improvement of Latin American public service

delivery due to a deficient financial infrastructure and a lack of human resources, particularly at the municipal level. Research suggests that conceptualizing and structuring privatization as public-private partnerships may be an effective and more equitable manner of public service provision.

In particular, research sponsored by UN Habitat finds that hybrid organizations which combine public sector ethos with private sector market orientation can leverage public-private partnerships to provide effective and more equitable solid waste services in informal settlements (Ahmed and Ali, 2004; Kruljac, 2012; Gutberlet, 2008). Scholars argue that the public-private partnership framework is legible to neoliberal urban governance logics and thus provides an accessible form of community participation (Ahmed and Ali, 2004; Kruljac, 2012; Gutberlet, 2008). A key challenge for government officials and community members is to ensure participatory and deliberatively democratic decision-making and public service provision (Kruljac, 2012; Gutberlet, 2008). Within this framework, participation by community members is key to developing tailored programs that meet solid waste services needs for informal settlements (Ahmed and Ali, 2004). Other authors go further and call for deliberatively democratic processes that go beyond rote participatory attempts (Kruljac, 2012; Gutberlet, 2008). Deliberative democracy is often more fraught and difficult, yet produces longer-lasting impacts on solid waste management. For example, community members feel more invested in solid waste management programs developed and managed by local residents (Gutberlet, 2008). In addition, government officials develop greater respect for community participation through the internalization of deliberatively democratic attitudes (Kruljac, 2012; Gutberlet, 2008).

Coupled with deliberatively participatory processes, the public-private partnerships framework is predicated on mutual investment from all social groups involved.

Responsibilization

Citizen involvement in public service provision is often conceptualized and operationalized by the state through a discourse of responsibilization. As the state retreats from traditional roles and services, a discourse emerges that place responsibility for co-governance on other sectors of society and individual citizens themselves. Citizens and social groups are expected to take responsibility for governance through participation in governance processes and provision of public services. Responsibilization is operationalized through legal and institutional mechanisms, such as participatory budgeting laws, privatization, participatory decision-making processes, and information and decision-making transparency.

To situate my conceptualization of responsibilization, I draw in part on the work of Bjørn Sletto and Anja Nygren (Sletto and Nygren, 2016). The authors discuss their engaged scholarship in the context of neoliberal urban governance of environmental services, making distinct but related claims regarding governance processes and citizen participation. In terms of governance, the authors argue that neoliberal urban governance is characterized by the retreat of the state from environmental management services that traditionally were in the public sector domain. The retreat of the state happens at a level of discourse and is actualized with specific governance techniques. At the level of discourse, “neoliberal rationality” posits that governance should occur via partnerships with multiple actors from the private sector, non-governmental sector, and citizens themselves (Sletto

and Nygren, 2016). These partnerships, in particular with citizens and community-based organizations, are rationalized through the discourse of responsabilization which renders citizens responsible for actions and services typically performed by governments. Responsibilization can thus be seen as a disciplining action that seeks to integrate and manage unruly citizens who may make broader claims of justice from the state (Sletto and Nygren, 2016).

Fragmented & Networked Actors

However, the authors contend that the responsabilization process is not hegemonic. Rather, responsabilization is contingent and contested by non-state actors as they navigate relationships and partnerships with a decentralized, fragmented, and fractured neoliberal state. While the neoliberal state presents a hegemonic discourse, actual policies and procedures are spatially uneven and therefore, the responsabilization of citizens is also only partial. Non-state actors are not obediently following the commands of the state but rather engage in various strategies of contestation and accommodation (Sletto and Nygren, 2016). This suggests that the neoliberal governance structure provides opportunities for non-state actors to engage with the state in ways that are counterhegemonic and potentially transformative.

The process of responsabilization also “depoliticizes the structural causes of environmental risks and failures in solid waste management” (Sletto and Nygren, 2016). Citizens and civil society are now responsible for taking on the burdens of the act of governing, such as providing public services. Responsibilization obscures the state’s role in creating, facilitating, and/or denying environmental and solid waste management

challenges (Chantada, 2014). The state may utilize responsabilization techniques as a way to “manage urban conflict” by moderating civil society’s claims for broader social justice (Chantada, 2014). While responsabilization through participation may moderate and shape claims-making against the state, hybrid civil society organizations may use governance gaps to play multiple roles as advocate, mediator, and service provider. With a deliberatively democratic governance approach, hybrid organizations may establish effective and equitable public-private partnerships that meet solid waste management needs and maintain relative autonomy of hybrid organizations.

NEOLIBERAL URBAN GOVERNANCE REFORMS IN SANTO DOMINGO

Santo Domingo has undergone and continues to undergo neoliberal urban governance reforms related to the decentralization, territorial division, and retreat of the state. From 1930 until his assassination in 1961, Rafael Trujillo ruled the Dominican Republic as a dictator and centralized political and economic power within the presidency and his family. Following the dictatorship of Trujillo, Joaquín Balaguer continued to centralize planning and governance during his three separate terms of “light dictatorship” throughout the 1960s through 1990s (Torres, 2014).

As the Dominican Republic began to emerge from Trujillo’s state-owned control of agriculture and industries, an IMF structural adjustment package in the 1980s induced the growth of free trade zones and the service sector, in particular in tourism. The neoliberal philosophy continued the shift to the service sector and further privatization of state-owned industries. The signing of the Central American Free Trade Agreement in 2005 ratified the

process of the neoliberal globalization of the Dominican Republic's economy through import market liberalization and export market orientation.

Despite economic growth into the ranks of middle income countries, the Dominican Republic continues to experience significant economic inequality and social disparities between formal and informal residential areas. Rural migrants from underdeveloped rural areas continue to be drawn to the Santo Domingo region seeking opportunity. In response to neoliberal economic and governance reforms, as well as pressures due to urbanization, the Dominican Republic has shifted from federally centralized executive planning and power to increasingly decentralized, city-led planning and governance (Torres, 2014). The state was “refounded” (Geddes, 2014) through two constitutional revisions and accompanied by restructuring of territorial jurisdictions. Furthermore, municipal governments sought to retreat from public service provision through the privatization of public services and responsabilization of civil society.

During the presidency of Leonel Fernandez, the Dominican Republic codified the shift towards neoliberal governance by adopting a new Constitución in 2010 and 2015, which specifically mandates decentralized administration and participatory budgeting (República Dominicana, 2015). In 2004, the Dominican Republic reorganized provincial territorial divisions into ten planning regions to more effectively administer reforms and governance functions (República Dominicana, 2004). In 2007, the Dominican legislature updated its 1952 Distrito Nacional y los Municipios law to “... transfer functions, competencies, and resources...” of the federal government to be managed at the municipal level (República Dominicana, 2007). In addition, the Dominican Republic adopted two

budgetary reforms. The 2006 Ley Orgánica de Presupuesto para el Sector Público mandated funding for certain services and increased budget transparency (República Dominicana, 2006). Indicating a legal shift towards responsabilization, a new municipal participatory budgeting system required that municipalities incorporate a participatory process to fund community-initiated programs and projects (República Dominicana, 2007). During the Balaguer administration, the National Planning Office, the Dominican Municipal League, Dominican Municipal Federation, and the Urban Issues Commission were all established. The municipal and urban organizations provide technical support to municipalities and develop policies flowing from federal authorities for municipal adoption. Responding to neoliberal urban governance reforms, these organizations have shifted their focus to providing regional collaboration between municipalities.

The 2015 Constitución includes Article 67, which underscores the right of the state to prevent pollution as well as protect and maintain the environment for present and future generations (República Dominicana, 2015). The federal legislature created the Ministerio de Medio Ambiente y Recursos Naturales (República Dominicana, 2000) to fulfill this mission. The Ministerio de Medio Ambiente y Recursos Naturales has taken an active role in working to improve municipal solid waste management, issuing solid waste management environmental management rules in 2003 (Secretaría de Estado de Medio Ambiente y Recursos Naturales, 2003). In 2014, the Secretaría de Estado de Medio Ambiente y Recursos Naturales issued municipal solid waste management policies that call for community participation in a zero waste solid waste management framework (Ministerio de Medio Ambiente y Recursos Naturales, 2014). Currently, the Dominican

House of Representatives is considering adoption of an updated solid waste management law that seeks to improve previous solid waste management-enabling legislation (D. Herrera Diaz and S. Ynilico-Ramirez Bethancourt, 2016).

In Santo Domingo, while local municipalities are increasingly responsible for public service provision under the constitutional decentralization mandate, the central government continues to restrict municipal revenue generation authority. The Santo Domingo region was divided into five separate municipalities, all with varying levels of administrative and financial capacity. All of the municipalities utilize private solid waste management contractors to collect and transport urban refuse. Lastly, the discourse of responsabilization is operationalized through procedures of participatory budgeting, workshops, and citizen roundtables (Sletto and Nygren, 2016). Neoliberal urban governance reforms have improved public service provision and citizen participation. However, due to partial decentralization, uneven municipal capacity across the region, and varying levels of civil society agency, neoliberal urban governance reforms still face significant challenges to improving public service provision for all citizens.

CONCLUSION

Neoliberal urban governance manifests in a number of ways, but I am primarily concerned with how decentralization and territorial division impacts municipal governance. In addition, I am particularly interested in how the retreat of the state distances the state from its traditional governing duties to a governance role. No longer directly responsible for environmental services management, the neoliberal municipality seeks to privatize public services and renders citizens responsible for collective challenges.

Yet, the process of retreat is often partial and uneven due to limited governmental resources and vested power interests. The state may attempt to mitigate claims for justice by marginalized communities through neoliberal reforms. But, it is incumbent upon civil society actors to exploit fractures in the neoliberal state to the benefit of society-at-large.

In my findings chapters to follow, I will argue that decentralization, territorial division, and the retreat of the state all have specific impacts on solid waste management in Santo Domingo at the municipal and community scale. Furthermore, I will argue that particular organizations are already navigating the uneven neoliberal urban reforms to delivery solid waste services in informal settlements.

Chapter 3: Solid Waste Management Paradigms and Models

INTRODUCTION

This chapter will situate solid waste management as a common good as well as a key component of urban infrastructure networks. In addition, the chapter will provide solid waste management terminology definitions and an overview of solid waste management paradigms and models. Lastly, the chapter discusses alternative solid waste management models in Latin America.

Solid waste management is critical to public health and one of the most important functions of municipal government, as well as a broader indicator of the nature and quality of municipal governance (Wilson, et. al., 2014; Gutberlet, 2008). Municipal governments in Latin America regularly struggle to provide adequate solid waste management due to limited budgets, lack of resources, and inadequate governance capacity. For those reasons, Latin American municipalities may turn to the private sector to provide solid waste management services. However, the private sector is frequently unable to provide adequate solid waste management services for all residents. The private sector's only goal is profitability and informal settlements present unique challenges to creating profitable solid waste management business models. In such cases, the state has historically organized solid waste management for protection of the public health, safety, and general welfare. Typically, the state's organization of solid waste management has been through direct service provision. However, as discussed in the previous chapter, the retreat of the state is eroding the state's responsibility to ensure public health, safety, and general welfare through direct service provision.

In addition, I view solid waste management as critical infrastructure. The interrelated infrastructure components of solid waste management—collection bins, vehicles, and facilities—create a network of infrastructure necessary for solid waste management. Often, the state is involved in the creation and maintenance of infrastructure, either through direct provision or the facilitation of private sector involvement. The state’s rationale for infrastructure creation often has multiple objectives, such as environmental quality, public health, and economic development (Wilson, 2016). Due to a single objective of profit-making, the private sector may underinvest in infrastructure and not meet additional general welfare objectives (Wilson, 2016). Furthermore, the private sector does not have a common good rationale to ensure fair pricing nor universal service of important services (Wilson, 2016).

Inadequate solid waste management provokes negative externalities, such as environmental degradation and increased public health risks. Irregular solid waste accumulations in waterways and unmanaged dump sites degrades water quality, negatively effects wildlife, and creates unsanitary conditions. Relatedly, irregular solid waste accumulations and litter encourages population growth of disease vectors, such as rats and mosquitos. In addition, methane emitted from landfills contributes to global greenhouse gas emissions. Due to these environmental and public health risks, the state should ensure adequate solid waste management to protect the public’s health, safety, and general welfare.

In order to manage solid waste’s sanitation impacts and negative externalities, solid waste management has developed a variety of paradigms and models to move solid waste

away from generators to other locations for treatment and processing, which will be discussed below.

TERMINOLOGY DEFINITIONS

Municipal solid waste can be defined as “wastes generated by households, and wastes of a similar nature generated by commercial and industrial premises, by institutions such as schools, hospitals, care homes and prisons, and from public spaces such as streets, markets, slaughter houses, public toilets, bus stops, parks, and gardens” (UN-Habitat, 2010). The composition of household solid waste typically consists of organic materials, disposable consumer goods packaging, and bulky household items, among various other common household items. Municipal solid waste may consist of hazardous waste materials, such as batteries and chemicals. But, for the purposes of this thesis, I will not discuss separation of household hazardous solid waste, which often necessitates a different set of management approaches. Municipal solid waste management can be thought of the “systematic” approach to handling this type of solid waste (Zaman and Lehmann, 2011). For the purposes of this thesis focuses, municipal solid waste management will primarily be discussed.

I am analyzing solid waste management approaches through two lenses: paradigms and models. Management paradigms are outlooks and conceptual frameworks regarding how individuals, government, businesses, and society think about solid waste and associated operational collection, transportation, and disposal techniques. Management paradigms inform management models and resulting collection and disposal approaches. Management models, on the other hand, can be informed by a dominant set of paradigms

or reflect a mixture of different paradigms and approaches. All solid waste management models involve the following operational aspects, following a variety of techniques: “generation, on-site storage, collection, transfer, transportation, processing and recovery, and ultimate disposal of wastes” (Zaman and Lehmann, 2011). Some solid waste management approaches prioritize final disposal in landfills and/or incinerators while others stress landfill diversion activities, such as waste reduction, reuse, recycling, and composting.

In addition, I distinguish between formal and informal solid waste management activities. Formal solid waste management activities are carried out by governing authorities and/or by the private sector as contracted by the public sector. Informal solid waste management activities are performed by individuals and businesses operating in the informal economy outside of governmental taxation and regulation. Further, I will distinguish between conventional and alternative solid waste management paradigms and models. Conventional paradigms and models are typified by rationally planned systems, utilize formal infrastructure, emphasize the use of capital-intensive technology, and assume citizens’ solid waste management behaviors are predictable and regular. Alternative solid waste management takes on a range of organizational structures, operational techniques, and management approaches, but these are all united by the common goal to meet the needs of a population not adequately served by conventional means. Often, alternative paradigms and models are characterized by community-planned systems, they navigate informal infrastructure with locally-appropriate technology, and they approach citizens’ solid waste management behaviors from a community development perspective. Both paradigms and

models have their strengths and weaknesses, which will be discussed in the following sections.

CONVENTIONAL MANAGEMENT PARADIGMS AND MODELS

Humans have been engaging in solid waste management since the earliest human settlements were formed. Different management paradigms and models have emerged in response to the types and volumes of waste, as well as related technologies. Zaman and Lehmann trace solid waste management technological innovations over the years and characterize the technological innovations in six waves reproduced in Figure 3.1, below.

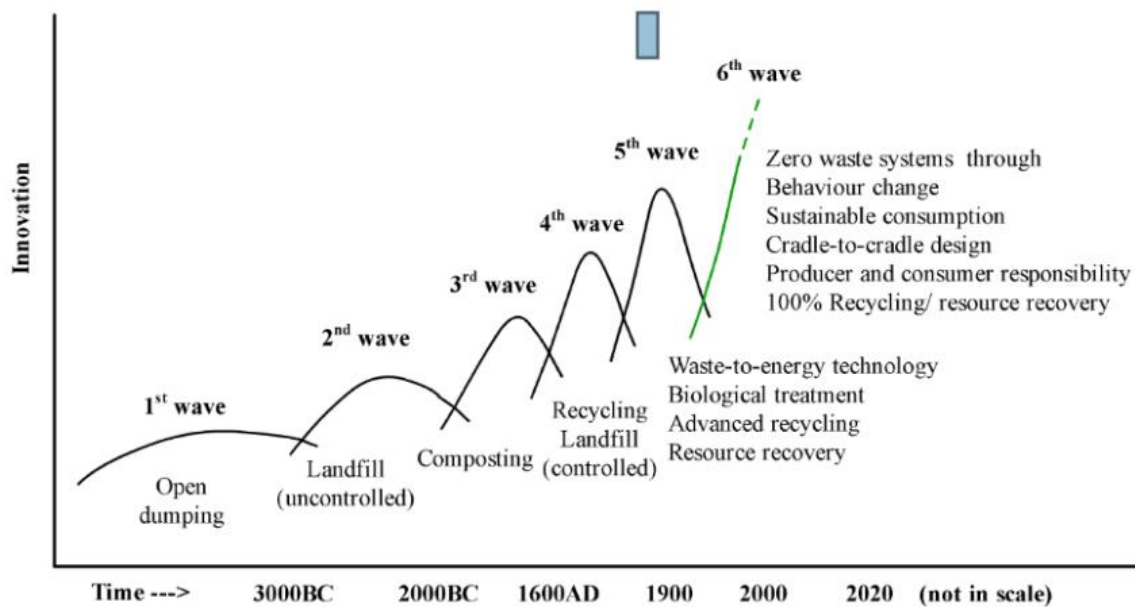


Figure 3.1: Waste Management Innovations

Source: Zaman and Lehmann, 2011

Open dumping was the first wave of solid waste innovation and many low-income countries, including the Dominican Republic, still engage in this practice (Zaman and Lehmann, 2011). Second, uncontrolled landfill development was documented in Greece as early as 3000 BC (Zaman and Lehmann, 2011). The third wave, composting, was first recorded in China around 2000 BC (Zaman and Lehmann, 2011). As the industrial revolution was taking shape and progressed into consumption-oriented economies, controlled landfills and recycling innovations constituted the fourth wave (Zaman and Lehmann, 2011). Waste-to-energy, biological treatments technologies, and advanced material processing facilities comprise the fifth wave (Zaman and Lehmann, 2011). Finally, the sixth and current wave of solid waste management innovations emphasize zero waste approaches and behavior change (Zaman and Lehmann, 2011). As solid waste management technology has improved, paradigms and models reflected these innovations.

Traditional Solid Waste Management

Traditional Solid Waste Management stresses a linear flow of solid waste from a waste generator to the final disposal point at a landfill or incinerator. Traditional paradigms and models emphasize picking up and disposing of solid waste as soon as possible. Traditional solid waste management may include some limited recycling if material processing is easily accomplished.

Integrated Solid Waste Management

Integrated Solid Waste Management shifts the management paradigms and models towards materials management, emphasizing reduction, reuse, recycling, and composting of solid waste. The United Nations Environment Program defines Integrated Solid Waste

Management as “the strategic approach to sustainable management of solid wastes covering all sources and all aspects, covering generation, segregation, transfer, sorting, treatment, recovery and disposal in an integrated manner, with an emphasis on maximizing resource use efficiency” (Ahmed, 2016). Integrated Solid Waste Management is less concerned with a linear flow of solid waste to final disposal. Instead, this paradigm works to minimize waste generation and maximize resource utilization by cycling resources through recycling and composting.

Integrated Sustainable Waste Management

Similar to Integrated Solid Waste Management, Integrated Sustainable Waste Management is defined as the handling of solid waste materials from the point of generation through resource recovery processes until final disposal (UN-Habitat, 2010; Organization for Economic Cooperation and Development, 2011). Under the Integrated Sustainable Waste Management framework, the UN-Habitat’s Solid Waste Management in the World’s Cities developed a set of ‘wasteaware’ benchmark indicators to assess municipal solid waste management (Wilson, et. al., 2014). The indicators are designed to conduct assessments at a municipal scale, but the analytical framework is useful for my analysis. The indicators measure solid waste management performance in two areas: a system’s physical elements and its governance elements (Wilson, et. al., 2014).

UN-Habitat denotes three physical elements: public health, environment, and resource management (UN-Habitat, 2010). To measure the public health element, UN-Habitat focuses on collection coverage, the existence of user feedback mechanisms, and user satisfaction levels (UN-Habitat, 2010). To measure the environment element, UN-

Habitat collects data on the amount of tons of waste disposed at the landfill and the level of control at the landfill (UN-Habitat, 2010). Lastly, to measure resource recovery, UN-Habitat calculates landfill diversion rates of recycling and composting (UN-Habitat, 2010).

In terms of governance elements, UN-Habitat measures inclusivity, financial sustainability, and sound institutions and proactive policies (UN-Habitat, 2010). Inclusivity is somewhat difficult to measure, but UN-Habitat attempts to document involvement of stakeholders in the planning and policy processes, equity of service for all users, private sector participation in service provision (both formal and informal), and institutionalization of these features (UN-Habitat, 2010). To measure financial sustainability, the Integrated Sustainable Waste Management framework looks at the completeness of cost calculations, the amount of cost recovery through revenues, and level of financial investment to meet environmental standards (UN-Habitat, 2010). Lastly, to measure sound institutions and proactive policies, UN-Habitat observes “policy commitment and ownership of the problem, the national policy context and framework, institutions and organizational coherence, regionalization and inter-municipal cooperation, private sector involvement and pro-poor public-private partnerships, and professional competence and networking” (UN-Habitat, 2010).

Sustainable Materials Management

The United States Environmental Protection Agency utilizes a Sustainable Materials Management framework and defines it as “a systemic approach to using and reusing materials more productively over their entire life cycles” (EPA, 2016). Whereas integrated solid waste management approaches encourage landfill diversion activities, the

linguistic shift from solid waste to materials management indicates a shift in management paradigms and models. Sustainable Materials Management works to design systems that prevent the generation of waste at every state of solid waste's life cycle (EPA, 2016). Sustainable Materials Management uses a waste management hierarchy that ranges from the most preferred approaches of source reduction and reuse of waste to the least preferred of treatment and disposal of waste (See Figure 3.2).

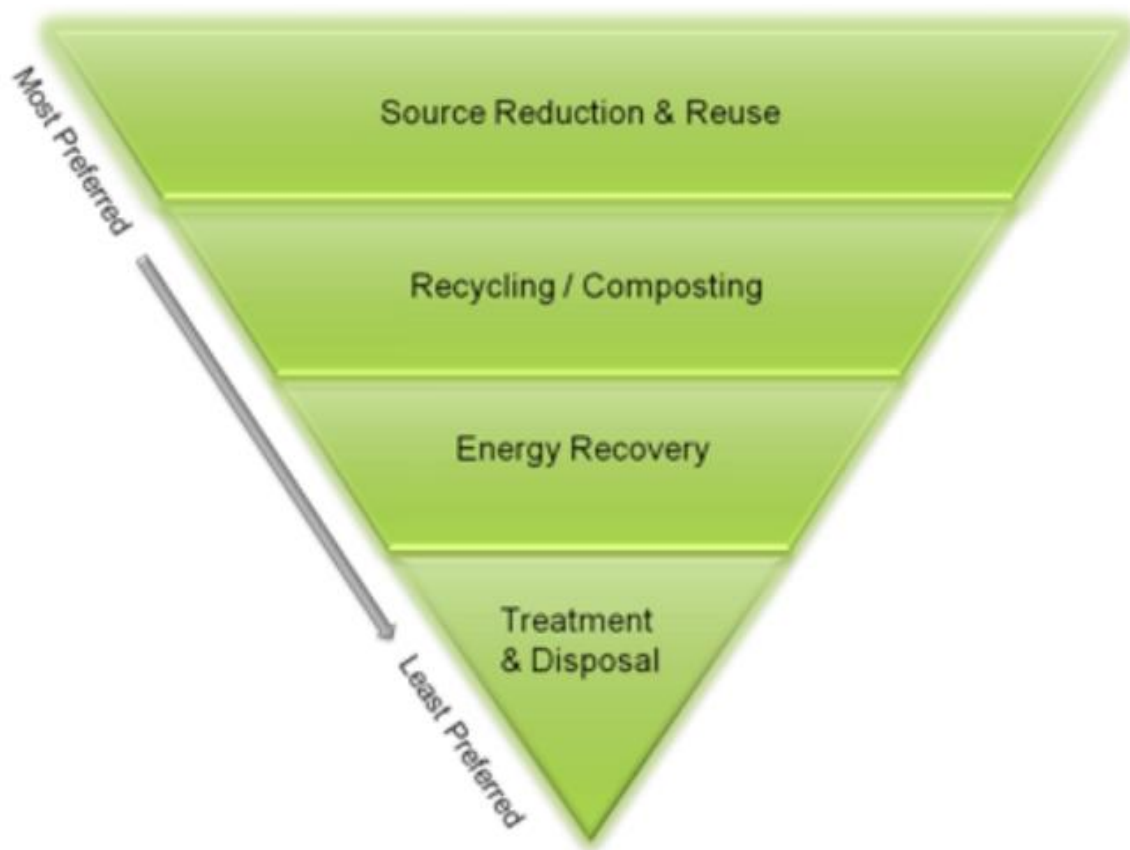


Figure 3.2: Waste Management Hierarchy

Source: Environmental Protection Agency, 2016

Zero Waste Management

Zero Waste Management's paradigms are very similar to Sustainable Materials Management. However, perhaps the biggest distinction is that Zero Waste Management is more of a visionary, holistic approach to solid waste management that aims to have zero solid waste going to landfills or incineration facilities. Zero Waste Management envisions a sustainable society where no resource is wasted. The Zero Waste International Alliance provides a peer-reviewed statement on what zero is:

...a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable nature cycles, where all discarded materials are designed to become resources for others to use. ZW means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them (ZWIA, 2009).

ALTERNATIVE SOLID WASTE MANAGEMENT IN INFORMAL SETTLEMENTS

All of the solid waste management paradigms and models discussed above may utilize conventional and/or alternative solid waste management operational techniques. Conventional solid waste management operations relies on the use of collection bins, dumpsters, large compactor vehicles, and other relatively capital-intensive technology. Sufficiently wide streets are necessary for placement of collection receptacles and for the maneuvering of collection vehicles. Under a conventional solid waste management approach, service users are expected to dispose of waste at designated places and times.

However, conventional solid waste management approaches are not as effective in informal settlements. Haphazard land use limits the space available for placement of collection receptacles. The spatial layout of informal settlements restricts the ability of large vehicles to navigate winding and narrow streets. Often, informal settlement residents

are not accustomed to solid waste disposal at designated places and times. In informal settlements, waste management behaviors may consist of irregular dumping into waterways and empty lots.

For these reasons, alternative solid waste management models have developed in informal settlements across Latin America in response to the lack of service by conventional means. These models have emerged to fill service provision gaps in informal settlements within the neoliberal urban governance context. The models can take on a range of organizational structures and management frameworks, but typically focus on community, environmental, and public health benefits, as well as economic development. This section will review alternative solid waste management models in Latin America in order to glean useful lessons for the development of alternative models in Santo Domingo, Dominican Republic.

Community-Based Solid Waste Management

Community-Based Solid Waste Management (CBSWM) is an international development approach to solid waste management in developing countries. CBSWM can take on a range of organizational models, relationships with the state, and landfill diversion activities. However, CBSWM typically emphasizes robust citizen participation and community capacity building to ensure that the benefits of solid waste management accrue to the local community.

CBSWM programs are carried out by members of a community to clean up waste in a community and/or to generate revenue from solid waste management activities (Anschütz, 1996). Such programs vary in organizational structure and degree of

community control from community participation to community management (Anschütz, 1996). Community participation can range in degree of involvement from “contributions of time..., changes in behavior, involvement in administration, management, and decision-making” (Anschütz, 1996). Community management meaningfully involves community members in the decision-making process of CBSWM program development and management (Anschütz, 1996). Often, community management is implemented by a smaller group of community members, designated by a participatory process (Anschütz, 1996).

Public-Private Partnerships

Unlike the CBSWM model, however, public-private partnerships may be more effective at sustainable solid waste management due to support from the public sector to encourage community-oriented organizations to provide solid waste management services. In addition, public-private partnerships may be more readily acceptable and legible to neoliberal urban governance frameworks.

Ahmed and Ali argue that there are three conditions for public-private partnership development opportunities. First, the public sector is delivering less than satisfactory service (Ahmed and Ali, 2004). Second, the private sector is willing to deliver service to satisfy unmet demand (Ahmed and Ali, 2004). Lastly, the public is willing to pay for service delivery in order to receive service benefits and better quality of service (Ahmed and Ali, 2004).

Ahmed and Ali examine three theoretical frameworks to analyze the appropriateness and effectiveness of solid waste management public-private partnerships

(PPPs) in developing countries. First, they discuss the sociological theories of functionalism and general systems to provide a framework to think about public-private partnerships as interconnected, evolving systems (Ahmed and Ali, 2004). Then they review the economic theory of property rights, which posits that rights of ownership creates incentives for goods and services provision (Ahmed and Ali, 2004). Finally, the authors present management science theories of ‘co-opetition,’ ‘complementor’ organizations, and collaborative advantage. Their framework suggests that both the public and private sector have their own competitive advantages that, when combined, can match the efficiency and quality of the private sector with the accountability and public service ethos of the public sector.

In order for public-private partnerships to be successful, leadership and citizen participation must be cultivated to incorporate community concerns of long-term development (Ahmed and Ali, 2004). Leaders and citizens should develop a “realistic commonly accepted vision” of a private-public partnerships’ goals and objectives (Ahmed and Ali, 2004). With a participatory ethos, successful PPP development combines the self-interest of individuals with the broader interest of the community (Ahmed and Ali, 2004). Lastly, successful public-private partnerships operate within a framework of relatively stable policy mechanisms that are flexible enough to adapt to change (Ahmed and Ali, 2004). However, policy frameworks and implementation strategies remain a challenge, in particular when community participation is not sufficient (Ahmed and Ali, 2004). In addition, the authors point out that PPPs are industrialized-nations “public policy prescriptions” that must be adapted to the conditions and needs of individual developing

countries (Ahmed and Ali, 2004). Below, I review six cases of public-private partnerships that can be classified as alternative solid waste management models.

Case Studies

Caracas, Venezuela

In Sucre, one of five municipalities in the larger metropolitan region of Caracas, Venezuela, the economic, political, and topographic characteristics of the municipality complicate solid waste management (Ramos, et al, 2012). Each municipality is charged with solid waste management, but the service is underfunded due to constricted budgets, lack of user fee payment, and adverse national economic trends (Ramos, et al, 2012). Sucre is also home to a large population of informal settlement residents. Residents in the upper areas of informal settlements lack roads and areas for waste container access, leading them to dispose of waste in alleys and stairwells which in turn create significant waste accumulations (Ramos, et al, 2012). Residents with closer access to waste containers may find containers overflowing due to low container capacity, infrequency of collection, and irregular set-outs of waste into containers (Ramos, et al, 2012).

However, the municipality is seeking innovative solutions to the solid waste program despite these challenges. Sucre has utilized a participatory budgeting law to fund a relatively successful solid waste management project (Ramos, et al, 2012). The project employs *mochileros* who go house to house in informal settlements to collect waste from residents (Ramos, et al, 2012). An educational campaign also created “environmental brigades” consisting of residents who watch over certain areas and advised neighbors about proper disposal habits, such as regular set-out times and locations (Ramos, et al, 2012).

However, a recycling project met with less success (Ramos, et al, 2012). Recycling containers were set out in neighborhoods in the hope that the sale of recyclables would generate enough income to pay employees and be self-sustaining, but the project failed due to the cost of transportation. The authors discuss an additional solution of an educational campaign, although it is unclear if it will receive participatory budgeting support (Ramos, et al, 2012).

In conclusion, the *mochilero* model succeeded because of on-going municipal support through participatory budgeting. But, the authors state that projects need to seek self-sustainability rather than being associated with a particular mayor (Ramos, et al, 2012). In addition, the recycling project failed due to transportation costs and low recycling markets. This seems to indicate that for similar projects to be successful, ongoing, non-partisan political will is necessary to overcome costs challenges, such as equipment and infrastructure costs, and ongoing financial sustainability that can weather commodity markets and variable user payment.

Curitiba, Brazil

In the late 1980s, a neoliberal urban governance agenda decentralized governance functions to Brazilian municipalities (Kruljac, 2012). In response to governance decentralization and solid waste management challenges, Curitiba, Brazil created three interrelated solid waste management programs from 1989 to 1991: ‘Waste that is Not Waste,’ ‘Waste Purchase,’ and ‘Green Exchange’ (Kruljac, 2012).

These programs were targeted at areas that had solid waste accumulations in waterways and empty lots, high incidence of disease, and inadequate sanitation (Kruljac,

2012). Furthermore, the programs were intended to assist in the process of regularization of informal settlements (Kruljac, 2012). Prior to upgrading informal settlements with street and sanitation infrastructure, solid waste management challenges would be improved under these programs (Kruljac, 2012). Under a new comprehensive waste management plan, the ‘Waste that is Not Waste’ program was an educational effort designed to encourage recycling in informal settlements and inform residents about separating organic and inorganic solid waste (Kruljac, 2012). Coupled with the educational component was the ‘Waste Purchase’ program that “purchased” solid waste in exchange for bus tokens or surplus food produce from local farmers (Kruljac, 2012). In order to qualify for the ‘Waste Purchase’ program, informal settlement residents needed to form a neighborhood association and sign an agreement with the city committing the association to distributing refuse bags to participating families (Kruljac, 2012). Lastly, the ‘Green Exchange’ program was designed to supplement the ‘Waste Purchase’ program in neighborhoods that participated in the ‘Waste Purchase’ program and had begun the process of regularization (Kruljac, 2012). The ‘Green Exchange’ program worked similarly to the ‘Waste Purchase’ program, but specifically purchased recycling commodities rather than commingled waste (Kruljac, 2012).

Critics of the programs argued that recycling rates did not increase as much as the municipality claimed and that the programs reproduced a “paternalistic and populist approach” to governance (Kruljac, 2012). However, despite the shortcoming of the model, Kruljac argues that public-private partnerships between municipalities and community-based organizations can be a successful and effective approach to solid waste management

in developing countries (Kruljac, 2012). Kruljac notes Ahmed and Ali's caution that "public-private partnerships represent an 'industrialized-country public policy prescription applied in development country settings'" (Kruljac, 2012). For that reason, Kruljac maintains that deliberatively democratic governance structures and processes should be in place for public-private partnership success in developing country settings (Kruljac, 2012). Therefore, the government's role is to facilitate participatory governance as the neoliberal state transitions from its role as direct service provider to regulator (Kruljac, 2012).

Nuevo Laredo, Monterrey, and Mexico City, Mexico

In the article *Serving the unserved: informal refuse collection in Mexico*, Martin Medina uses a qualitative case study approach to survey informal refuse collection activities and municipal informal refuse collection policies in three metropolitan areas (Medina, 2005). Medina argues that informal refuse collection may help alleviate poverty, provide an unmet service, and reduce environmental degradation. He found that in all three cities, informal refuse collection workers make higher wages than others of similar economic status. In addition, Medina documented that residents were paying for this informal service, indicating unmet demand and willingness to pay. However, he also noted that some informal refuse collectors were dumping solid waste in irregular accumulation areas. Often, irregular dumping of collected solid waste occurred when treatment and processing facilities were located far away from the generation locations. When governmental authorities recognized informal refuse collection's presence, governmental officials were able to incorporate informal refuse collection activities through access to treatment and processing infrastructure.

Medina documents differing approaches towards informal refuse collection—from repression to neglect to collusion to stimulation—which results in differing informal refuse collection activities (Medina, 2005). He argues that informal refuse collection is an important form of municipal solid waste management, but that many Mexican municipalities are not aware of the policy frameworks that are supportive of informal refuse collection. Again, fragmented governance policies towards solid waste management simultaneously creates opportunities for informal refuse collection as well as inhibits universal and equitable service.

Managua, Nicaragua

Managua, Nicaragua is a flood prone city with neighborhoods inaccessible to conventional waste collection (Olley, et al, 2014). In their article, the authors are updating an UN Habitat solid waste management study previously conducted in Managua. The methodology for that study used the Integrated Sustainable Waste Management framework, which is “divided into three physical municipal solid waste management components: 1) public health, 2) environmental protection, and 3) resource management; and three governance strategies: 4) inclusivity, 5) financial sustainability, and 6) sound institutions and pro-active policies” (Olley, et al, 2014).

In their article, the authors contend that solid waste collection micro-businesses may offer an alternative solid waste management model in areas with difficult access (Olley, et al, 2014). However, five of the six micro-businesses studied failed due to their inability to gather sufficient collection fees; only one of the micro-businesses collected sufficient fees and created income through the sale of recyclables (Olley, et al, 2014). The

authors argue that the alternative solid waste management models were well received by community members and were an important collection strategy for areas with difficult access if they are able to obtain sufficient financial support through government contracts or user fees.

The article furthermore outlines how Managua was able to construct a landfill and recycling facility with international donor funds (Olley, et al, 2014). In particular, the authors point out how a municipally-financed waste transfer station was a critical component of improving solid waste management. In addition, UN Habitat and international agencies provided the municipality with support to develop a municipal solid waste management based on the UN Habitat assessment framework. The authors emphasize the importance of this “technical-operational” support and “financial-administrative” capacity building for these organizations (Olley, et al, 2014: p. 827). In addition, the authors stress the municipality’s role in supporting these alternative approach through awareness of its “contractual-financial-administrative and supervisory responsibilities” (Olley, et al, 2014: p. 827).

Overall, the authors state that the municipality needs to commit to these models to ensure their sustainability and success overtime, or in other ways establish political will to sustainably carry out the programs.

Mazatenango, Guatemala

Like many other Latin American cities, Mazatenango, Guatemala, is characterized by rapid urbanization and related growth in population and waste production (Yousif and Scott, 2007). The authors claim that these trends exacerbate a lack of planning capacity

and an insufficient resource base for adequate solid waste management. Furthermore, the authors note the trend of increasing decentralization in Latin American cities, arguing that cities are the emerging arena for innovative governance. They also note that the lack of financial resources limits municipalities' ability to deploy effective solid waste management. Most Latin American cities rely on user fees for service to fund services, but many residents cannot pay or are not willing to pay for poor service. While many developed nations utilize property taxes to fund solid waste services, this is not common in Latin America, as is the case in Santo Domingo.

Decentralization to lower levels of government presents challenges and opportunities. Some challenges include the unworkability of conventional solid waste management techniques in unplanned neighborhoods, limited funding resources, lack of public awareness, and limited continuity between changes in municipal administrations. At the same time, governance at the municipal level may provide an opportunity to work closely with stakeholders to develop holistic, integrated solid waste management approaches. The authors note that the shift to decentralization is often accompanied by a shift from governing to governance, or the increasingly reliance on partners with non-state actors to provide public services (Yousif and Scott, 2007).

The authors argue for a sustainable waste management approach that integrates social, economic, and administrative decisions into an effective governance framework. This framework involves critical participation from stakeholders from the public, private, and non-profit worlds. These stakeholders can articulate and identify a solid waste management vision and needs in order to design a system that is appropriate to the local

context. The authors also recommend that a solid waste management scheme include a community education component to influence behavior change of residents accustomed to irregular solid waste management behavior due to past poor service delivery. Once again, similar physical and governance components for solid waste management success in developing countries' cities are observed in this case study.

Pedra sobre Pedra, Brazil

In *Recovering Resources – Recycling Citizenship*, Jutta Gutberlet presents case study research of solid waste management in Pedra sobre Pedra, Brazil, as well as other similar Brazilian communities. Pedra sobre Pedra shares many characteristics with informal settlements across Latin America: located in a floodplain, lacking basic public services, exhibiting precarious living conditions (Gutberlet, 2008). In Pedra sobre Pedra, community-based organizations collect and process recyclables from neighborhood households. The organizations were started as “self-help” initiatives to clean up the environment and provide the organization's participant with a source of income. The recycling organizations do not receive governmental support and financially rely on the sale of recyclable commodities. The lack of governmental support and fluctuating recycling markets has presented ongoing challenges to the viability of the organizations.

Gutberlet cites the public sector's “omissive behavior” for the lack of basic sanitation in informal settlements. In addition, Gutberlet argues that the private sector has been unable to respond adequately to solid waste management challenges in such communities. Gutberlet cites governmental fragmentation as the key issue why serious solid waste management issues have not been addressed in informal settlements. At the same

time, Gutberlet also argues that decentralization of governance functions may provide more participatory structures and opportunities. In my view, decentralization does not guarantee less governance fragmentation, particularly if there is a lack of coordination between jurisdictional territorial divisions.

Gutberlet argues that the lack of governmental support for such “self-help” initiatives is the primary limiting factor of program success, scale, and sustainability. Yet, she retains optimism and argues for co-management of services by community members and the government. The co-management framework is a third-way between the government and the market that requires commitment from both the public and private sector. Gutberlet conceptualizes a Participatory Solid Waste Management framework that emphasizes participatory governance and development. In her view, participatory frameworks are deliberatively democratic and community-led. At the same time, Gutberlet recognizes that participation is very challenging for both community members’ struggling with social exclusion and government officials attempting to craft meaningful participatory structures, policies, and programs. Ultimately, Gutberlet argues that a participatory approach is necessary for success in local conditions and that political will from governing authorities is critical for community-oriented solid waste management sustainability.

CONCLUSION

It is apparent that there is a range of solid waste management paradigms and models. At the same time, there are number of common challenges and opportunities for adequate solid waste management in Latin American informal settlements. Latin American municipal governments typically have limited resources at their disposal and are not able

to provide adequate solid waste management to all residents, particularly in informal settlements. For that reason, many Latin American municipalities turn to the private sector for solid waste management service provision. However, conventional solid waste management models are unlikely to provide adequate service due to low profitability resulting from irregular waste management behaviors, as well as particular spatial land use and infrastructure patterns.

In response to the lack of solid waste management services, many alternative models have been developed across Latin America. The alternative models share common paradigms and operational models. The alternative paradigms emphasize participatory approaches that involve community members and other stakeholders in decision making, resource allocation, and program execution. The operational models use locally-appropriate collection operations and educational campaigns to meet the unique needs of informal settlements. Perhaps most importantly, most successful alternative models involved collaboration between the public sector, private sector, and civil society. Co-management of solid waste services created conditions for success: financial sustainability through government support, access to infrastructure, and tailored service delivery. In the following chapters, I will draw on lessons from these diverse solid waste management paradigms and models to discuss Santo Domingo's approach to solid waste management.

Chapter 4: Solid Waste Management Governance in Santo Domingo

INTRODUCTION

Neoliberal urban governance reforms shape the ability of municipalities in the Santo Domingo metropolitan area to provide solid waste services. Federal legislation and administrative rules devolve solid waste management responsibilities to local authorities and set the policy frameworks for implementation. In fact, the national environmental and natural resources agency, Ministerio de Medio Ambiente y Recursos Naturales (Environmental and Natural Resources Ministry), issued comprehensive and integrated solid waste management policies that are characteristic of solid waste management best practices. Yet, in the Santo Domingo region, only the Distrito Nacional has instituted municipal solid waste management administrative rules.

In 2003, the Pan-American Health Organization and a consultant contracted by the Ministerio de Medio Ambiente y Recursos Naturales issued two preliminary evaluations of the state of solid waste management in the Dominican Republic. The Secretaría de Estado de Medio Ambiente y Recursos Naturales report stated that privatization improved solid waste management services “...in terms of frequency and assiduity...” (Cattafesta, 2003). Yet, the Pan-American Health Organization points out that only 55.5 percent of households at the national level received direct solid waste collection (Organización Panamericana de la Salud, 2003). Compared with 84.8 percent and 87.7 percent of households at the national level who received portable water and electricity, respectively, it is clear the solid waste management service provision is lagging (Organización Panamericana de la Salud, 2003). The reports cited the lack of political will, inadequate

institutional capacity, deficient resources, and citizen behaviors as barriers to adequate municipal solid waste management (Cattafesta, 2003; Organización Panamericana de la Salud, 2003). The Pan-American Health Organization stated that the lack of solid waste service provision data collection, and the technical resources to do so, inhibited municipalities' ability to effectively assess and manage the challenges of solid waste management.

The Distrito Nacional attempted to improve its provision of solid waste management services by commissioning the Study of the Integrated Solid Waste Management Plan in the National District, Santo Domingo de Guzmán, República Dominicana by the Japanese International Cooperation Agency in 2006 (JICA, 2006). The JICA report found that the Distrito Nacional lacked the administrative, financial, and operational resources necessary for adequate solid waste management (JICA, 2006). In addition, the JICA report found that citizen attitudes and behaviors compound the lack of municipal resources. Many citizens view solid waste collection as a service to be performed for free by the government and many citizens continue to dispose of solid waste at irregular hours and locations (JICA, 2006). JICA conducted a detailed evaluation of solid waste management in the Distrito Nacional and provided a comprehensive plan of action with specific goals, methods, and planning frameworks to improve solid waste service provision. The Distrito Nacional has made improvements suggested by the study, but has fallen short in adoption of an integrated solid waste management plan and implementation of adequate reforms.

In my view, these reforms have improved solid waste service provision in the formal areas of municipalities, in particular the Distrito Nacional. These areas share certain characteristics that facilitate solid waste management efficiency improvements, such as formal street networks, fee collection systems, adequate human and financial municipal resources, designated collection points and equipment. These characteristics allow for traditional means of solid waste collection, relying primarily on compactor vehicles collection routes, to function.

This chapter will review the pertinent municipal governance legislation, solid waste management policies, and solid waste management administrative rules which provide the context for solid waste management governance in formal and informal areas of Santo Domingo. Then, the chapter will discuss the effects of decentralization, territorial division, and the retreat of the state on solid waste management in the formal sectors of Santo Domingo. Federal and municipal legislation, policies, and rules creates the neoliberal urban governance framework in which the municipalities carry out, or do not carry out, adequate solid waste management.

LEGISLATION, POLICIES, AND ADMINISTRATIVE RULES

Constitución

In 2015, the Dominican Congress adopted an updated constitution to reflect governmental reforms, including a number of legal statutes that affect municipal solid waste management. The Dominican Constitución establishes municipal powers, such as the ability to establish municipal taxes that do not coincide with federal taxes (República Dominicana, 2015). In addition, the Constitución transfers administrative responsibilities

and resources to municipalities, including municipal and participatory budget execution in accordance with law, in order to promote decentralized governance (República Dominicana, 2015). Lastly, the Dominican Constitución establishes state power to protect the environment (República Dominicana, 2015).

Ley No. 176-07 del Distrito Nacional y los Municipios

In 2007, the Dominican Republic Legislature updated the 1952 Distrito Nacional y los Municipios law to reform municipal governance and intergovernmental relations between the federal and municipal governments. The law “... [transferred] functions, competencies, and resources...” of the federal government to municipalities (República Dominicana, 2007). Specifically, the law mandates that municipalities protect public health and the environment and provide municipal solid waste collection and final disposal services (República Dominicana, 2007). Furthermore, the law mandates that municipalities create citizen education program about solid waste management (República Dominicana, 2007).

The Distrito Nacional y los Municipios law establishes the requirements to create a municipality. To become a municipality, the area must have a “geographic, social, economic, and cultural identity,” have a population greater than 15,000 inhabitants, sufficient infrastructure, adequate revenue sources, and create a process to consult the effected population (República Dominicana, 2007).

In addition, the Distrito Nacional y los Municipios law states that municipalities shall not impose taxes that are already levied by the federal government (República Dominicana, 2007). The federal government imposes income and property taxes and

municipalities are restricted to raising funds from permits and fees (República Dominicana, 2007). Then, a portion of federal revenues are transferred to municipalities based on population (República Dominicana, 2007). The municipalities are required to dedicate a portion of tax expenditures to solid waste services, but one government official reported that the allocated tax percentage is not sufficient to adequately deliver service to all citizens (J. de la Cruz, interview, July, 2016). Santo Domingo municipalities charge solid waste service fees, but the municipalities have difficulty collecting payments from citizens (G. Baez, interview, June, 2016). The Distrito Nacional y los Municipios law is the basic governance framework for public service provision, including solid waste management.

Ley Orgánica de la Administración Pública, No. 247-12

The 2012 Ley Orgánica de la Administración Pública defines the concept of decentralization as transferring administrative responsibilities and functions to provincial and municipal political-administrative divisions with appropriate financial, technical, administrative, and legal frameworks (República Dominicana, 2012). The Ley Orgánica de la Administración Pública imprecisely defines decentralization without delineating specific administrative responsibilities and functions to be transferred. Furthermore, the definition of appropriate financial, technical, administrative, and legal frameworks is not specifically described in the law.

In 2001, the Dominican federal legislature updated the Santo Domingo municipal jurisdictions to their current geographic boundaries (República Dominicana, 2001). Public administration is decentralized to these municipal jurisdictions. However, the territorial

division does not address how to effectively coordinate decentralized administrative functions that require regional coordination, such as solid waste management.

Ley Orgánica de Presupuesto para el Sector Público No. 423-06

The Distrito Nacional y los Municipios law details the legal framework of municipal governance, including budgeting procedures. The federal executive branch provides the majority of municipal budget revenues and retained the power of municipal budget approval in the 2006 Ley Orgánica de Presupuesto para el Sector Público (República Dominicana, 2006). Municipal budgets must be submitted for approval annually to the Budget Director General (República Dominicana, 2006). This law requires solid waste management expenditure approval by the federal government. While the federal government decentralized solid waste management service provision to municipalities, the federal government retained centralized control over funding such service.

Ley No. 170-07 que instituye el Sistema Presupuesto Participativo Municipal

In 2007, the Dominican Congress passed Ley No. 170-07 que instituye el Sistema Presupuesto Participativo Municipal with the “objective to establish mechanisms of citizen participation in the discussion, creation, and follow-up of municipal budgets” (República Dominicana, 2007). Specifically, the law mandates that 40 percent of the amount received from the federal transfers to municipalities be allocated under the Participatory Budgeting System (República Dominicana, 2007). Among the objectives of the law is to “ensure community participation in the identification and prioritization of project ideas” and guarantee the participation of all community members (República Dominicana, 2007). The

law does not establish specific public projects to be carried out, but does establish a process that includes authoring of a development plan, citizen consultation via community assemblies with more than 30 families, and establishment of committees to conduct follow-up activities, as well as to promote process transparency and accountability (República Dominicana, 2007). The Participatory Budgeting System may be used to fund community-initiated solid waste management projects.

Ley 64-00 que crea la Secretaria de Estado de Medio Ambiente y Recursos Naturales

In 2000, the Dominican National Congress created the Secretaría de Estado de Medio Ambiente y Recursos Naturales (State Secretary of the Environment and Natural Resources) to “conserve, protect, improve, and restore the environment and natural resources, ensuring their sustainable use” (República Dominicana, 2000). The law establishes the federal agency’s purview over solid waste management, calling for the national government to promote investment in recycling and commercialization of recyclable commodities (República Dominicana, 2000). The law charges the agency to establish administrative rules for solid waste management (República Dominicana, 2000). Article 82 builds upon a 1989 law prohibiting waste disposal on land by prohibiting waste disposal in waterways, and Article 175 makes it a crime to engage in such activities. Chapter 6 of Ley 64-00 deals specifically with municipal solid waste management and charges municipalities to protect the environment and public health through the collection, treatment, transportation, and final disposal of non-hazardous solid waste based on administrative rules (Article 106).

Norma para la Gestión Ambiental de Residuos Sólidos No Peligrosos

In 2003, the Secretaría de Estado de Medio Ambiente y Recursos Naturales released its rules governing non-hazardous solid waste management. The rules establish solid waste management principles, such as the importance of education, conscious-raising, and citizen participation in solid waste management (Secretaría de Estado de Medio Ambiente y Recursos Naturales, 2003). The rules prohibited certain activities, such as illegal dumping, and provided general requirements for storage, collection, transportation, street cleaning, and final disposal of municipal solid waste, as well as mandating that municipalities take all necessary steps to adequately manage solid waste for the protection of the environment and public health. In addition, the rules state that municipalities must develop mechanisms to guarantee quality and efficient solid waste service for all citizens equally, including solid waste management master plans tailored for each particular municipality. The rules explicitly recognize the need for alternative collection systems in areas where collection vehicles cannot access households due to the poor street or terrain conditions.

Política para la Gestión Integral de Residuos Sólidos Municipales (RSM)

In 2014, the Ministerio de Medio Ambiente y Recursos Naturales released a comprehensive set of integrated municipal solid waste management policy guidelines, principals, objectives, and action steps based on the zero waste principles. The document proposed a number of policy guidelines important to my thesis, such as citizen participation in solid waste management and integration of informal waste management systems. In addition, the document establishes a number of municipal solid waste management principles in line with zero waste principles, such as integrated solid waste management,

environmental sustainability, financial sustainability, and source reduction. Based on those policy guidelines and principles, the document outlines a series of actions steps to improve municipal solid waste management (Ministerio de Medio Ambiente y Recursos Naturales, 2014) (Table 4.1):

Citizen Participation	Operational/Technical	Legal Framework
<ul style="list-style-type: none"> • Creation of citizen participation mechanisms • Incorporation of existing community organizations into solid waste management • Incentivizing public-private partnerships to manage solid waste 	<ul style="list-style-type: none"> • Incentivizing resource recovery and recycling • Incentivizing recycling centers • Defining technical and operational municipal solid waste rules • Determining a cost-appropriate solid waste management fee system • Improving human resources capacity 	<ul style="list-style-type: none"> • Defining legal planning documents • Reaffirmation and clarification of municipal responsibility for solid waste management • Reaffirmation and clarification of federal responsibility for solid waste management • Definition of specific roles and institutional mechanisms at the municipal and regional levels

Table 4.1: Integrated Solid Waste Management Action Steps

Source: Ministerio de Medio Ambiente y Recursos Naturales, 2014

Reglamento Municipal de Aseo

The Distrito Nacional's municipal solid waste management rules establish the zero waste principles outlined in the federal integrated solid waste management policies document (Ayuntamiento del Distrito Nacional, 2014). The rules describe the shared responsibilities of producers of waste including the municipality, commercial businesses, industry, institutions, and residences. Furthermore, municipal solid waste management is

detailed with specific administrative and operational requirements for adequate service provision, including administrative performance control measures and service quality standards. In addition, the rules state that services fees will be determined by real service costs and mandate publication of the fee schedule. In terms of operations, solid waste storage requirements, solid waste collection frequencies, and fines for illegal dumping are established. The Distrito Nacional's solid waste management rules serve as an example of well-delineated solid waste management administrative and operational policy.

Proyecto de Ley Sobre Manejo de Residuos Sólidos de la República Dominicana

In 2015, Dominican legislators proposed an update to existing municipal solid waste management law. The law is still under consideration, but includes important clarification of municipal responsibility and implementation of solid waste management. The proposed law mandates that municipalities establish solid waste management rules, plans, fees, and administrative resources necessary to complete those tasks in accordance with the zero waste principles established in the federal policy framework (D. Diaz and S. Bethancourt, 2015). Also, the proposed law calls for the Ministerio de Medio Ambiente y Recursos Naturales to create a National Solid Waste Plan to develop comprehensive collection, final disposal, and financing of adequate solid waste management. In addition, the proposed law specifically mandates that municipalities develop an Urban Integrated Solid Waste Management Plan in accordance with the national plan, and establishes the scope of municipal solid waste management from household storage to final disposal, and calls for specific infrastructure improvements, financing mechanisms, and the use of

public-private partnerships to support the improvement of municipal solid waste management.

In summary, municipal governance legislation creates the neoliberal urban governance framework in which municipalities carry out solid waste management. The federal government decentralized administrative governance functions to municipalities, but did not devolve sufficient taxation and budgetary authority to municipalities to adequately carry out solid waste management. Nor do municipal political jurisdictions provide for regional coordination of solid waste management activities. The federal environmental agency provides integrated solid waste management guidance, but federal legislation does not require municipal adoption of solid waste management administration and operations rules. In the Santo Domingo metropolitan region, only the Distrito Nacional has adopted comprehensive and detailed solid waste management rules. The proposed federal legislation complements the Secretaría de Estado de Medio Ambiente y Recursos Naturales' policy guidelines by mandating municipal adoption of solid waste management rules, as well as national and urban solid waste management planning.

LEGISLATION, POLICIES, AND ADMINISTRATIVE RULES EFFECTS

In my view, the legislation, policies, and administrative rules in the previous section are influenced by the neoliberal urban governance features discussed in my thesis. Decentralization, territorial division, and the retreat of the state are codified by the federal government and are reflected in municipal governance frameworks. The following section will discuss how the three neoliberal urban governance features created by the discussed legislation, policies, and administrative rules shape municipal solid waste management.

Decentralization

When the Dominican Legislature updated the Constitución and Distrito Nacional y los Municipios, the hope of neoliberal reformers was to “...streamline public management and modernize the Dominican state...” through governance reforms (M. Pinales, interview, August, 2016). The intent of governance decentralization was to provide greater municipal authority over and participation in public service provision. However, decentralization has been an incomplete process (M. Pinales, J. Torres, interview, June and August, 2016). Marianela Pinales, Encargadora de la División de Genero, Ministerio de Relaciones Exteriores (Director of the Foreign Relations Ministry’s Division of Gender), summarized the challenges of incomplete decentralization:

Our municipalities are very weak. In our country, the city councils charge fees, permits for signs, advertising, and some have managed to charge a certain amount of money to collect the garbage. But, that is very insignificant. It is not enough. (M. Pinales, interview, August, 2016).

The federal government transferred administrative responsibilities to municipalities but did not provide the financial mechanisms nor the administrative resources necessary to adequately provide solid waste service to all residents (Organización Panamericana de la Salud, 2003). The Dominican Constitución states that municipalities may only establish municipal taxes that do not coincide with federal taxes. The federal government imposes income, sales, and property taxes restricting municipalities to levying fees and fines (M. Pinales, interview, August, 2016). The federal government transfers a portion of federally-collected taxes to municipalities. But, government officials report that the federal government does not transfer the total amount mandated by law (M. Pinales, J. de la Cruz, interview, July and August, 2016). In addition, the Budget Organization Law mandates that

municipal budgets be approved by the federal executive branch. One official stated that the federal budget requirements reduces municipal flexibility to adequately fund solid waste services (J. de la Cruz, interview, July, 2016). The Participatory Budgeting Law was created to flexibly fund projects selected through citizen participation. But, the process is susceptible to political maneuvering by more affluent and organized constituencies, often leaving the most marginalized citizens out of the process (J. Torres, interview, June, 2016). In effect, municipalities struggle to adequately finance human resources and service costs necessary to adequately provide solid waste service for all citizens (M. Pinales, J. de la Cruz, interview, July and August, 2016).

Territorial Division

The neoliberal urban governance reform rationale for territorial division is to create smaller governmental units that are more able to be responsive to citizens' needs, including providing adequate public services. Based on those rationales, the Santo Domingo metro area was divided into five municipalities. However, the territorial division of the Santo Domingo region into multiple municipalities creates challenges of governance continuity, policy continuity, and regional planning.

Solid waste management is a public good that, managed improperly, creates public health and environmental negative externalities that do not respect jurisdictional boundaries. Furthermore, solid waste management relies on shared infrastructure resources, such as street networks and the sole metro area landfill. The existing legal framework charges municipalities with solid waste management but does not require inter-municipal coordination. The Proyecto de Ley Sobre Manejo de Residuos Sólidos de la

República Dominicana does require that municipalities create Urban Integrated Solid Waste Management Plans that align with a national plan (República Dominicana, 2015). However, to date, no Santo Domingo municipalities has developed internal solid waste management plans nor policies for inter-municipal coordination.

Further compounding the lack of solid waste management planning is partisan change of administrative staff during elections. In the view of one observer, territorial division was merely an opportunity to create political vessels for patronage jobs (M. Pinales, interview, August, 2016). A former municipal administrator reported that up to 70 percent of administrative staff will change if a new party takes power (G. Baez, interview, June, 2016). Different politicians place differing emphasis on solid waste management and commitment to adequate service provisions often varies based on a particular administration's disposition (G. Baez, interview, June, 2016). Ultimately, partisan change of administrative staff diminishes the continuity of policy implementation in the face of the lack of planning.

Municipal solid waste service varies in extensiveness and effectiveness from municipality to municipality. While the Distrito Nacional and Municipalities law vests solid waste management authority in municipalities and federal laws mandate creating certain rules for managing solid waste, there are no enforcement mechanisms nor incentives for compliance. Similarly, no enforcement mechanisms nor incentives accompany the Secretaría de Estado de Medio Ambiente y Recursos Naturales' comprehensive rules and policies for solid waste management. In effect, this results in fragmented approaches to solid waste management. For example, only the Distrito

Municipal has enacted policies to guide solid waste management (Ayuntamiento del Distrito Nacional, 2014). The Distrito Nacional's Reglamento Municipal de Aseo details specific operational, financial, and legal requirements for solid waste management. For that reason, as well as the Distrito Nacional's more developed governance resources, the Distrito Nacional provides the most improved solid waste services.

The other municipalities do not have solid waste management policies and rely on private sector contracts for the collection of waste. Santo Domingo Norte's contract with a private waste hauler does include rules for frequency of collection, types of containers, and other waste collection requirements (Ayuntamiento de Santo Domingo Norte, 2015). Yet, Santo Domingo Norte does not stipulate non-operational requirements, such as service equity and costs recovery mechanisms. Based on my field observations, the lack of detailed solid waste management rules creates fragmented service delivery, particularly in informal settlements. The private service provider is complying with Santo Domingo Norte's contract terms, such as regular collection of dumpsters. But, formal settlement solid waste management techniques are ineffective in informal settlements with barriers to accessing solid waste dumpsters.

Retreat of the State

"It was like living with trash in your house," stated Marinela Pinales when describing the state of solid waste collection in the 1990s (M. Pinales, interview, August, 2016). In my view, solid waste collection privatization improved solid waste management in the formal areas of the city. In addition, privatization of solid waste management creates some continuity of service provision through long-term contracts. Particularly in the

Distrito Nacional, persistent waste accumulations were no longer the norm as solid waste collection began to occur with greater frequency. However, informal areas do not experience these improvements. Solid waste collection in informal areas is not profitable due to geographic limitations that do not allow for solid waste collection vehicles to access these areas. Santo Domingo Norte is attempting to provide service for informal areas by placing waste containers at the perimeters of these areas. But, steep staircases, infrequent collection, and citizen behaviors limit disposal in the collection containers. Instead, solid waste disposal continues to occur in empty lots and waterways.

Only the Distrito Nacional identified the limitation of a one-size-fits-all approach to solid waste management and created a community-based solid waste management framework to be discussed in the next chapter. However, the current limitation of this approach is that alternative solid waste management frameworks are not codified into law. The federal Norma para la Gestión Ambiental de Residuos Sólidos No Peligrosos, Política para la Gestión Integral de Residuos Sólidos Municipales (RSM), and the Proyecto de Ley Sobre Manejo de Residuos Sólidos de la República Dominicana recognize the importance of citizen participation and potentials of public-private partnerships. However, these policies and the proposed law do not recognize the particular solid waste management issues of informal settlements, nor do they consider alternative solid waste management frameworks. In addition, there are no financial or technical assistance incentives for the creation of alternative solid waste management models, nor specific guidance for municipalities on how to do so.

In line with the discourse of responsabilization, the legal framework places solid waste management burdens on citizens. However, these policies and rules do not go far enough in recognizing the state's role in creating solid waste management systems for all citizens, particularly those residing in informal settlements. For example, despite a successful alternative solid waste management model in the Distrito Nacional, no federal guidance or statutes mention the use of such hybrid organizations. Furthermore, the Distrito Nacional's rules do not codify the use of such alternative solid waste management frameworks. The lack of codification, coupled with the lack of planning and policy continuity, creates a tenuous situation for such arrangements. Indeed, staff members of these organizations worry, as a different political party takes power in the Distrito Nacional, that the alternative solid waste management contracts are subject to unfavorable revision or revocation (C. Arias, J.C. Fajardo, N. Mendoza, R. Silfa, interview, June and July, 2016).

The alternative solid waste management organizations of Santo Domingo, to be discussed in more detail in the next chapter, benefit from strong ties between these networked social actors. The organizations' longevity allows for demonstration of proficient service delivery, social benefit, and coordinated political advocacy. But, without planning and policy frameworks that explicitly encourage municipal use of alternative solid waste management approaches, more fragmented social actors are at a disadvantage to create similar systems in their respective municipalities. Indeed, in the community of Los Platanitos in Santo Domingo Norte, multiple years of dialogue about creating a similar organization has yielded no concrete outcome (J. de la Cruz, interview, July, 2016)

CONCLUSION

In my view, neoliberal urban governance reforms continue to improve solid waste management in the formal sectors of Santo Domingo. But, challenges regarding decentralization, territorial division, and the retreat of the state limit the effectiveness of such reforms in informal settlements.

Decentralization has been an incomplete process with the federal government retaining financial control over municipalities through restricted municipal taxation authority and budgeting processes that limit expenditure flexibility. Secondly, territorial division has resulted in fragmented solid waste management planning and policy implementation. Lastly, the retreat of the state distances federal and municipal responsibility for ensuring adequate solid waste management for residents of informal settlements.

The Secretaría de Estado de Medio Ambiente y Recursos Naturales issued visionary zero waste principles and comprehensive policy guidelines for achieving integrated solid waste management. But, the challenges of neoliberal urban governance reforms limit the ability of under-resourced municipalities to achieve adequate solid waste management in both formal and informal sectors. The proposed solid waste management legislation may improve municipal solid waste management by mandating that municipalities create solid waste management administrative rules. In addition, the proposed law mandates the creation of a National Solid Waste Plan and aligned Urban Integrated Solid Waste Management Plans. The creation of such plans would create a roadmap for improved solid waste management service delivery and strengthen policy implementation. But, plans are

only as strong as the financial and human resources dedicated to implementation. Neoliberal urban governance reforms have yet to dedicate sufficient financial and human resources to municipal governments.

An important omission on the part of the existing legal framework is the lack of recognition of the potential of alternative solid waste management models. Considering 50 percent of Santo Domingo residents live in informal settlements and have a very low capacity to pay for service, federal and municipal governments must seek out alternative solid waste management models. Operating within the neoliberal urban governance framework, municipalities may develop alternative models through the logic of public-private partnerships and responsabilization. In the Distrito Nacional, an alternative solid waste management model has proven effective for the particular geographic, economic, and social characteristics of informal settlements, to be discussed in the next chapter.

Chapter 5: Solid Waste Management in Informal Settlements of Santo Domingo

INTRODUCTION

As discussed in the previous chapter, informal settlements have not experienced solid waste management improvements due, in part, to neoliberal urban governance reforms. As a result, residents of informal settlements are exposed to public health and environmental risks. For example, during my field work, I observed the impacts of inadequate solid waste management in an informal settlement community called Los Platanitos in Santo Domingo Norte. I argue that Los Platanitos' challenges of inadequate solid waste management is emblematic of informal settlements across Santo Domingo and Latin America.

In 2016, I participated in the Dominican Republic Practicum, a service-learning course offered by the Program in Community and Regional Planning at The University of Texas at Austin. The course built on past practicum participants' research in the community of Los Platanitos. In 2008 and 2010, practicum researchers documented environmental and health risks associated with the lack of solid waste management, such as pollution and flooding of urban creeks (Sletto, ed., 2008; 2010). Practicum researchers found that deficient street infrastructure, resident solid waste management behaviors, and the lack of locally appropriate solid waste management systems contribute to persistent solid waste accumulations in empty lots and creeks throughout Los Platanitos (Sletto, ed., 2010; 2016). In 2010, practicum researchers worked with local community members to develop a community-based solid waste management plan (Sletto, ed., 2010). In addition, in 2012,

practicum participants and community members developed an alternative organic waste management approach through the creation of a vermicomposting system. However, alternative solid waste management efforts in Los Platanitos have struggled to sustain organizational, financial, and operational viability. Based on this research, Sletto posits Los Platanitos' solid waste management challenges are “symptomatic” of informal settlements across the Santo Domingo metropolitan area (Sletto, 2014).

Despite similar challenges, informal settlements in the adjacent municipality of the Distrito Nacional have created a viable alternative solid waste management model. This chapter will present a critical assessment of these models in the context of neoliberal decentralization, territorial division, and retreat of the state, and discuss lessons for other municipalities in the Santo Domingo metropolitan area.

COMMUNITY FOUNDATION MODEL HISTORY

Organizational Development

The environmental sanitation *fundaciones* (“foundations”; i.e. community-based microenterprises) of the Distrito Nacional were born from protest against the lack of solid waste management services in the municipality's most vulnerable communities (N. Mendoza, interview, July, 2016, interview, July, 2016). In the late 1990s, informal settlements across the Distrito Nacional did not receive adequate solid waste management services and solid waste accumulated in empty lots and creeks (See Figure 5.1). Community members took to the streets to protest these conditions by piling and burning solid waste in streets to block transit (N. Mendoza, interview, July, 2016).



Figure 5.1: Solid Waste Accumulation in Channelized Creek in La Zurza

Source: Author, 2017

In the informal settlement called La Zurza, community leaders became frustrated with the municipality's lack of response to the protests (See Figure 5.2). The community leaders began to shift their strategy to “protesting with proposals” and sought out proactive solutions to the solid waste management crisis in their communities (N. Mendoza,

interview, July, 2016). Three community organizations started meeting to discuss alternatives to protest and decided to begin to collect solid waste themselves. At the same time, these protests and critical solid waste management situation caught the attention of the Canadian Embassy who financed the purchase of hand-pushed carts to collect solid waste in these informal settlements.



Figure 5.2: La Zurza Informal Settlement

Source: Author, 2017

The confluence of community action and international support provided the framework for the development of La Zurza's solid waste collection microenterprise. In

the beginning, the microbusiness charged participating household a nominal fee to cover collection costs (N. Mendoza, interview, July, 2016). Collected solid waste was deposited on main streets to be collected by the municipality, albeit intermittently. As the microenterprise demonstrated success and resident interest, the Dominican development organization Instituto Dominicano de Desarrollo Integral (IDDE) began to provide support to expand collection; organizational and technical assistance; and source separation education for residents (N. Mendoza, interview, July, 2016). In addition, IDDE provided funds to purchase a rear-loading dumpster for more efficient solid waste pickup by municipal trucks (J. Candelario, interview, June, 2016). In four other Distrito Nacional informal settlements, similar microenterprises began solid waste collection efforts, as well.

In 2003, an opportunity to expand the service impact and organizational capacity of the microenterprises arrived via a European Union program called Saneamiento Ambiental para Barrios Marginales (SABAMAR). SABAMAR's objective was to improve the quality of life in five informal settlements through integrated solid waste collection while also contributing to the reduction of poverty (Dominguez, 2001). SABAMAR provided organizational and operational technical assistance through its Solid Waste Collection Pilot Project to eight informal settlements areas in the Distrito Nacional and Santo Domingo Este (N. Mendoza, interview, July, 2016). The pilot project program also provided six months of financing in order to get the organizations off the ground as well as organizational development assistance, such as leadership training, business planning, and the development of an organizational structure (J.C. Fajardo, N. Mendoza, interview, July, 2016). For example, SABAMAR recommended that the community foundations

create an organizational structure that included a general manager, accountant, and operations supervisors. In these eight informal settlements, including La Zurza, SABAMAR's assistance helped the microenterprises become more fully formed businesses (N. Mendoza, interview, July, 2016). Today, day-to-day management is conducted by paid staff members and the organizations are governed by community assemblies. The community assembly consists of individual community organizations who send delegates to vote on a board of directors (J. Candelario, interview, June, 2016). The board of directors provides general oversight and longer-term planning while day-to-day management is carried out by the staff members (J. Candelario, interview, June, 2016).

In 2006, SABAMAR wanted to support the business with compactor vehicle equipment donations to scale up solid waste collection (N. Mendoza, interview, July, 2016). But, in order to do so, SABAMAR requested that the businesses transform into not-for-profit community "foundations" in order to create community control of the organizations rather than control by a handful of business owners. There is also a recognition on the part of community foundation leadership that the solid waste management work requires a sustained community effort (J.C. Fajardo, interview, July, 2016). In addition, community leaders understood that the control of a business would reside in the hands of a few proprietors, which would preclude broader community-based involvement.

Once the businesses reorganized as community foundations, SABAMAR financed rear-end loading compactor collection vehicles for each community foundation (N. Mendoza, interview, July, 2016). Furthermore, SABAMAR financed the construction of a

solid waste transfer facility for collection vehicle to unload solid waste into tractor-trailers for transportation by the Distrito Nacional and final disposal at the landfill (R. Silva, interview, June, 2016). In my conversation with Nicolas Mendoza, Planning Director of a community foundation, he stated that transportation is critical to solid waste operations. Indeed, the compactor vehicles allow for the community foundations to manage up to 5,000 tons of waste every month. In addition, the solid waste transfer facility is also critical to minimize costs and improve transportation efficiencies. Collection compactor vehicles are able to return to running collection routes, rather than driving dozens of miles to the landfill. Similarly, tractor-trailers have much more carrying capacity for transportation to the landfill.

In addition, SABAMAR recognized a need for an on-going financial mechanism to fund the work of the community foundation (J.C. Fajardo, interview, July, 2016). SABAMAR and the community foundation leadership understood that the capacity of very low-income residents to pay for solid waste service was minimal (N. Mendoza, interview, July, 2016). Because of this, foundation leadership recognize that it is not profitable for private corporations to service informal settlements and that community-oriented organizations with municipal support are necessary to provide solid waste management services in these communities (J.C. Fajardo, interview, July, 2016). In my conversations with community foundation leadership, there was an emphasis on community participation and an assertion that the informal settlement residents are more responsive to community-oriented organizations. With that in mind, SABAMAR advocated for a contract between

the municipalities and the community foundations in which the Distrito Nacional paid a set amount per ton of solid waste collected (J.C. Fajardo, interview, July, 2016).

In 2008, the Distrito Nacional agreed to pay 20 dollars per ton of solid waste collected (J.C. Fajardo, interview, July, 2016). SABAMAR also worked with three fundaciones in the Santo Domingo Este municipality. However, politicians lacked the political will to agree to a contract, which resulted in the three Santo Domingo Este community foundations folding without an on-going financial mechanism (N. Mendoza, interview, July, 2016). Five fundaciones continue to operate with support from the municipal contract in the Distrito Nacional (See Table 5.1).

Organization Name	Neighborhoods Served
Entidad de Saneamiento Comunitario de La Zurza (Escoba)	Ensanche Capotillo
Fundación Comunitaria de Saneamiento Ambiental Los Guandules, La Ciénega, Guachupita y 27 de Febrero (Fucosaguscigua27)	Los Guandules, La Ciénega, Guachupita y 27 de Febrero
Fundación Saneamiento Ambiental de La Zurza (Fundsazurza)	La Zurza
Fundación de Desarrollo y Medio Ambiente La Puya (Fundemapu)	La Puya
Fundación de Saneamiento Ambiental Comunitario (Funsaco).	Guailey, Simón Bolívar, las Cañitas, 24 de April

Table 5.1: Environmental Sanitation Foundations

Source: N. Mendoza, interview, July, 2016

In 2009, the Diario Libre newspaper reported that each foundation collects between 30 and 120 tons of waste each day (Mejía, 2009). The collected solid waste is weighed at the transfer station to be billed to the Distrito Nacional. Robinson Silfa, Environmental

Director of Fundación de Saneamiento Ambiental de La Zurza (FUNDSAZURZA), reported that the city contract is capped at 3,500 tons per month (R. Silfa, interview, June, 2016) . He stated that the community foundation collects above and beyond that amount because of the amount of waste being produced, but the organization does not receive payment for amounts over 3,500 (R. Silfa, interview, June, 2016). In my conversation with Julio Cesar Fajardo, President of FUNDSAZURZA, he reported that the Distrito Nacional owes the community foundations significant amounts of past due payments (J.C. Fajardo, interview, July, 2016). This creates financial pressure on the community foundations as they provide services without payment. The community foundations' contracts are up for negotiation this year under a new political administration. Community foundation leadership are feeling nervous, but hopeful, that the contracts will be renewed.

Organizational Services

During my thesis field research, I spent a month and a half working on a consultation report for FUNDSAZURZA, observing firsthand the organizational services provided by this and other community foundations.

The community foundations use hand-pushed carts to navigate the narrow alleys for house-to-house collection of solid waste (See Figure 5.3).



Figure 5.3: Handcart Solid Waste Collection

Source: Author, 2017

Once the hand carts are full, the community foundation workers unload the solid waste into large piles on main roads (See Figure 5.4).



Figure 5.4: Vehicle Solid Waste Collection

Source: Author, 2017

In addition, street sweeping crews walk the main roads and market areas to sweep solid waste into piles (See Figure 5.5).



Figure 5.5: Solid Waste Sweeping

Source: Author, 2017

Then workers load the solid waste piles into compactor vehicles, which are driven to the transfer station for transfer to tractor trailers and weighing for payment. The community foundations also provide recycling services to some households and businesses. A recycling team focuses on particular areas of La Zurza to provide education for recycling separation. Then, the recycling team returns to those households for bi-

weekly collection of recyclable materials, primarily single-use plastic bottles (See Figure 5.6).



Figure 5.6: Recycling Collection

Source: Author, 2017

The recyclables are loaded onto a small truck, which also runs recycling routes to area schools and non-profits, to deliver the recyclables to a recycling center. The recycling center is jointly utilized and operated by the five Distrito Nacional community foundations.

Recycling has not been profitable for the organizations due to small recycling volumes and low plastic commodity prices. Community foundation leaders recognize that there is a perverse incentive for the community foundations to not recycle (C. Arias, interview, July, 2016). The city contract does not pay for recycling and any recycling diverted from the landfill reduces the amount of tonnage paid for by the city (C. Arias, interview, July, 2016). But, the community foundations continue to engage in recycling as part of their larger environmental stewardship mission (F. Santana, interview, July, 2016).

In 2013, FUNDSAZURZA developed a comprehensive strategic plan for economic, social, and cultural development of La Zurza. The strategic plan calls for continued solid waste management efforts and expansion of recycling programming (FUNDSAZURZA, 2015). As I developed my consultation report for FUNDSAZURZA, I aligned my key recommendations with the strategic plan. Specifically, I observed significant amounts of double loading of waste. Workers would collect waste in handcarts, unload the waste onto the ground, and then reload waste into compactor vehicles. I suggested that the community foundation seek out ways to minimize this double loading of waste through coordination with the vehicles and placement of rear-end loading dumpsters as space permits. I observed that the majority of household solid waste was organic waste. Currently, there is no solid waste management system to divert organic waste from the landfill. Organic waste can be processed into a value-added product of compost and may serve as an additional revenue source for the community foundation, exemplified by an incipient community-based composting project developed in Los Platanitos through collaboration with The University of Texas (Sletto ed.. 2012; 2014;

2016). Collaboration with the municipalities for organic processing facilities would be necessary to manage this waste stream. Additionally, community education efforts would also be necessary to encourage source separation of organics, recycling, and other solid waste streams. Lastly, I recommended that the community foundations negotiate with the Distrito Nacional to include payment for recycling tonnage in order to create an economic incentive for expanded recycling. My consultation report also made specific, smaller recommendations on each aspect of the organization's operations. For example, I observed inconsistent use of personal-protective equipment and recommended the organization make efforts to ensure proper safety procedures.

In addition, as a part of the community foundation's larger community vision, the organizations provide additional social services, such as facilitating youth groups that engage in afterschool art and cultural activities, women's groups that discuss and provide a support network for women's issues, and elder care that provides food for the elderly (R. Silfa, interview, June, 2016). The community foundations also engage in infrastructure improvement projects, such as house repairs and mosquito fumigation, as well as improvement of street and storm water infrastructure (R. Silfa, interview, June, 2016). Per the contract with the Distrito Nacional, the community foundation must invest five percent of their contract revenues in social and infrastructure programs and projects (J.C. Fajardo, interview, July, 2016). FUNDSAURZA views solid waste collection as an important component and revenue stream to accomplish their mission of "improving the quality of life of residents, increasing their involvement in decision making and actions that promote the social, political, and economic development of themselves" (FUNDSAURZA, 2017).

CRITICAL ASSESSMENT OF THE COMMUNITY FOUNDATION MODEL

The community foundations simultaneously benefit from and are limited by the three features of neoliberal urban governance reform discussed in my thesis. Decentralization creates opportunities for municipalities to create innovative policies, but restricts the ability of municipalities to provide resources to sustain such policies. Territorial division allows for unique alternative solid waste management policy initiatives but inhibits the coordination of such policies across the Santo Domingo region. Perhaps most significantly, networked social actors are able to fill the solid waste service gaps left by the retreat of the state. But, in the absence of networked social actors, informal settlement residents struggle to build organizational capacity to undertake solid waste management efforts.

Decentralization

The decentralization of governance responsibility to municipal authorities presents opportunities and challenges for solid waste management in informal settlements. As discussed in the previous chapter, solid waste management responsibility was decentralized to municipal authorities with significant guidance as to what solid waste management needs to accomplish. However, federal legislation and rules do not sufficiently delineate specific efforts necessary to achieve adequate solid waste management in informal settlements.

The fragmented policy landscape creates some opportunities for innovative alternative solid waste management in informal settlements, as illustrated by the community foundations in the Distrito Nacional. But, less innovative municipalities are

attempting to manage solid waste in informal settlement with conventional solid waste management approaches. Conventional solid waste management approaches that rely on large dumpsters and compactor vehicle access do not adequately serve the geographic and social features of informal settlements. Residents must traverse long distances over deficient streets infrastructure networks to place waste in city receptacles. Mandating that private contracts service informal settlements house-by-house is not feasible because such a system is not profitable. Thus, the community-oriented approach of the environmental sanitation community foundations bridges the gap between difficult access to solid waste receptacles and house-by-house collection.

Yet, the incomplete nature of decentralization presents challenges to other municipalities encouraging community foundation models. Municipal taxation and budget restrictions limit the municipalities' ability to raise and allocate sufficient revenues for solid waste management service expenditures. The participatory budgeting process was created to fill some of the gaps in public service. However, the process is susceptible to political capture by the most organized, often the most affluent, of citizens. Furthermore, the participatory budgeting process is intended to fund one-time infrastructure projects. In my view, participatory budgeting could be used to fund one-time equipment or business start-up expenses, but an on-going financial mechanism is necessary for alternative solid waste management models to be sustainable.

In theory, decentralization of solid waste management to municipalities may improve solid waste service delivery. In the formal sectors of municipalities and in the Distrito Nacional, that seems to be the case. However, federal legislation and rules should

be revised to require the inclusion of alternative solid waste management models based on the environmental sanitation community foundations. In particular, the Proyecto de Ley Sobre Manejo de Residuos Solidos de la Republica Dominicana, which is intended to update solid waste management enabling legislation, may consider mandating inclusion of alterative models in the national and municipal plans.

Territorial Division

Similarly, territorial division allows for unique policy initiatives but inhibits regional sharing of such initiatives. Informal settlements across Santo Domingo share similar characteristics, but only in the Distrito Nacional have environmental sanitation community foundations taken hold.

In large part this is due to varying political will on the part of mayors and city councils in each municipality. Environmental sanitation community leaders cited political will as one the biggest determining factor in the creation of the alternative solid waste management model. The Distrito Nacional has the strongest governance resources and experienced 14 years of continuous administration under the same political party. Those two factors significantly contributed to the creation and sustentation of political will for environmental sanitation community foundations to develop.

Regional coordination of solid waste management in informal settlements is necessary to mitigate the negative externalities of inadequate solid waste management. The public health and environmental risks provoked by inadequate solid waste management do not respect jurisdictional boundaries. Further, all Santo Domingo municipalities share common infrastructure bases, such as the street network and a sole landfill. For those

reasons, planning and policy efforts to create alternative solid waste management models should recognize the need for all municipalities to engage in such efforts simultaneously. Specifically, the Proyecto de Ley Sobre Manejo de Residuos Sólidos de la República Dominicana may mandate that Urban Solid Waste Management Plans “talk” to each other through coordinated development of individual municipal plans.

Retreat of the State

Community members and supportive external organizations stepped into the solid waste management gaps left by the retreat of the state from its public service responsibilities. In the Distrito Nacional, existing community organizations joined together to find solutions to the solid waste management challenges facing informal settlements. External organizations and funding agencies provided critical technical and financial support to bring these organizations up to a scale that impacted the community at-large. In my conversation with Robinson Silfa, Environmental Director of FUNDSAZURZA, he stressed the importance of existing relationships between community organizations as critical to the development of the community foundation. This network of community organizations created relationships, familiarity with working together, and a platform for a concerted effort to manage solid waste.

However, networked community organizations do not exist in all informal settlements. In Los Platanitos, Santo Domingo Norte, nascent community organizations have yet to demonstrate the organizational capacity to begin solid waste management efforts. Although municipal staff in Santo Domingo Norte have been supportive of alternative solid waste management models, political will in the form of legislative or

financial support is not present. This year, a new political party is taking power in Santo Domingo Norte and it remains to be seen whether or not political will to address solid waste management issues in informal settlements will emerge. In my opinion, an important role municipalities may play is offering leadership and organizational development support in informal settlements. Organizational capacity building may lay the groundwork for future solid waste management programs.

Privatization of public services may create a neoliberal urban governance rationale for alternative solid waste management public-private partnerships. But the concept of public-private partnerships needs to be expanded from the reliance on private businesses to include hybrid organizations that blend business services with community-oriented missions. At the same time, municipal contracts for solid waste management creates dependency on municipal financial resources. Many of the community foundation leaders cited the municipal contract as critical to financial sustainability, and they were acutely aware that if those funds should go away, the organizations would struggle to survive. As stated earlier, the community foundations' contracts are up for renewal and the Distrito Nacional is behind in service payments, creating financial strain on the organization. The debt payment may create a leverage point for renewal of the contract. The Distrito Nacional may prefer to defer debt payments by rolling over the contract rather than paying the bill in full at the time of contract expiration.

In addition, the process of responsabilization of citizens for solid waste management may create an opportunity for citizens to take a more significant role in solid waste management. Citizens can assert that the state must take responsibility for solid waste

management while also voicing their desire to be involved in that process. The community foundations are a good example of this balancing act between government responsibility, through financial support, and citizen responsibility, through service provision. This responsibility nexus satisfies neoliberal urban governance rationales and the critical need for solid waste management services in informal settlements.

Often, the discourse of responsabilization renders citizens genderless. But, gender plays a key role in solid waste management. In Santo Domingo, solid waste collection outside the home is often perceived as ‘men’s work,’ but inside the home, women are the primary managers of solid waste. In my interview with Marianela Pinales, Director of the Foreign Relations Ministry’s Division of Gender, she stressed the importance of women’s meaningful participation in the development of solid waste management programs. In her view, solid waste management programs can provide important opportunities for women to take on leadership roles and gain from economic development opportunities if the organizations are managed and structured with a recognition of the role gender plays in Dominican society. Further research on the role of gender in solid waste management is necessary to develop organizations that foster leadership roles for women in the informal settlements of Santo Domingo.

CONCLUSION

Conventional solid waste management approaches by for-profit service providers are unable to provide adequate service to informal settlements. Geographic, infrastructure, and citizen waste behaviors inhibit utilization of solid waste collection dumpsters located on the fringes of informal settlement. In addition, for-profit service providers cannot satisfy

their mission to make a profit with alternative solid waste management techniques. House-to-house collection is cost-prohibitive and not compatible with the conventional reliance on dumpster-loading vehicles.

Alternative solid waste management approaches developed by the community foundations described above are able to provide collection service and mitigate the negative externalities experienced by informal and formal settlement residents. Through over ten years of organizational development and operational experience, the community foundations provide a replicable model for other informal settlements outside the Distrito Nacional. Furthermore, community participation in solid waste management provides additional community development benefits, such as leadership development and infrastructure improvement.

Municipal authorities can promote community-oriented solid waste management through leadership development, organizational capacity building, on-going financial support, and equipment and infrastructure development. The federal and municipal governments should promote this alternative solid waste management model through codification in the Proyecto de Ley Sobre Manejo de Residuos Solidos de la Republica Dominicana, as well as in existing and future planning and policy documents.

During my interview with Gabriel Baez, former Santo Domingo Norte planning director, he proposed modifying the existing Tarjeta Solidaridad welfare system to include solid waste management. The Tarjeta Solidaridad is a federal welfare program that provides funds on a debit card for food, school, and natural gas expenditures. In my view, this idea has significant merit because it may encourage citizens to become accustomed to paying

for solid waste service. In addition, as a federally-funded program, funding of solid waste management through the Tarjeta Solidaridad would lessen the financial burden on municipalities. Municipalities may then focus on providing technical assistance, such as organizational and operational development, to environmental sanitation organizations. Also, municipalities may be more able to budget one-time or capitalized expenditures for transportation equipment and infrastructure.

In summary, federal support for alternative solid waste management can occur via inclusion of such models in federal planning and policy legislation, as well as financial support via the Tarjeta Solidaridad. With a federal financial mechanisms, municipalities can then focus on providing organizational capacity building support and initial investments in solid waste management equipment and infrastructure.

Chapter 6: Discussion

ALTERNATIVE SOLID WASTE MANAGEMENT CHALLENGES AND OPPORTUNITIES

The alternative solid waste management model of the Distrito Nacional suggests that practical solutions exist to improve solid waste management in informal settlements. The community foundations also demonstrate that a participatory development approach fosters community involvement as well as local economic benefits. To that end, fragmented neoliberal urban governance may be leveraged by civil society to meet solid waste management needs and provide additional economic and social benefits to informal settlements. Despite the criticisms that can be levied at structural failures, there is a critical need to mitigate the negative externalities of inadequate solid waste management that impact the public health, quality of life, and environmental quality of informal settlement residents. In my view, the various levels of government recognize this critical need, but lack the capacity, resources, and political will to address the challenges of inadequate solid waste management.

Alternative solid waste management models can operate within and be bolstered by the logic of neoliberal urban governance through public-private partnerships. At the same time alternative solid waste management models can challenge the framework of neoliberal urban governance and leverage the discourse of responsibilization through claims-making for adequate solid waste management service provision and locally-accrued development benefits. In Santo Domingo, solid waste management public-private partnerships improved service delivery in both formal and informal sectors. But, only the Distrito Nacional extended the public-private partnership framework to include community organizations

working in informal settlements. Other Santo Domingo municipalities are attempting to apply conventional solid waste management approaches to informal settlements with little success.

The lack of political will on the part of other municipalities remains a key determinant as to whether or not this proven model will be expanded. To engender political will, municipal and regional planning instruments are necessary to create a roadmap to improving solid waste management in informal settlements through community-oriented approaches. Additionally, federal legislation and policy should be updated to include alternative solid waste management public-private partnerships to enable municipal implementation of such models. There is an important opportunity to include these models in the Proyecto de Ley Sobre Manejo de Residuos Sólidos de la República Dominicana. Specifically, the law should recognize the need for alternative solid waste management approaches in informal settlements and call for their inclusion in the mandated national and municipal planning efforts. Furthermore, the Secretaría de Estado de Medio Ambiente y Recursos Naturales may issue policy guidance to municipalities to aid in the creation of alternative solid waste management systems. The federal government could also include solid waste service payment in the Tarjeta Solidaridad to lessen the financial burden on low-income citizens and municipalities to fund solid waste management. Finally, the Norma para la Gestión Ambiental de Residuos Sólidos No Peligrosos and the Política para la Gestión Integral de Residuos Sólidos Municipales (RSM) could also be revised to provide policy requirements and guidance for the creation of alternative solid waste management models.

The case of Santo Domingo also suggests that alternative solid waste management models can be developed under governance regimes characterized by a discourse of responsabilization. But, there should be a recognition on the part of the state that citizens cannot provide solid waste services on their own and that a nexus of responsibility produces the greatest solid waste management improvement. There is the practical reality that municipal laws prohibit solid waste collection without governmental approval. More importantly, there is a practical reality that many informal settlements lack the organizational capacity to create and sustain solid waste management programs without external support. Neoliberal urban governments can still encourage greater citizen participation in solid waste management, but may create programs for leadership and organizational capacity development to create conditions for program success. Leadership and organizational capacity development must also include a strong emphasis on the inclusion of women in leadership and decision-making roles.

ALTERNATIVE SOLID WASTE MANAGEMENT RECOMMENDATIONS

Municipalities should dedicate sufficient funds to financially sustain alternative solid waste management. For example, municipalities may make concerted efforts to charge formal settlement clients for solid waste service in order to subsidize the costs of service in informal sectors. By providing adequate solid waste management to all citizens in all areas of the city, municipalities will reduce the costs of public health risks and environmental degradation that effects all citizens regardless of solid waste service level. In the longer term, as municipalities become more proficient in governance functions, the

federal government may consider completing the decentralization process by allowing for more municipal taxation authority to fund critical public services.

Using neoliberal urban governance and market rationales, civil society may push for the federal and municipal governments to internalize the external costs of public health risks and environmental degradation. In particular, civil society may leverage travel and tourism's important contribution to the Dominican Republic's economy. In 2014, travel and tourism contributed 16 percent to the total Gross Domestic Product (World Travel and Tourism Council, 2015). Travel and tourism's total GDP contribution is projected to rise by 2.8 percent per annum from 2015 to 2025 (World Travel and Tourism Council, 2015). Travel and tourism total contribution to total employment is 14.7 percent, or 624,000 jobs, and is projected to rise by 2.3 percent per annum from 2015 to 2025 (World Travel and Tourism Council, 2015).

The President of the Dominican Republic is acutely aware of the importance of travel and tourism to the Dominican economy. In addition, federal and municipal political leadership understand the importance of keeping tourist areas free of solid waste accumulations. Political and business leadership are seeking to expand tourism opportunities for cruise ships to sail up the Isabel and Ozama Rivers that course through Santo Domingo. The banks of the Isabel and Ozama Rivers are also where many informal settlements are located. Also, a significant amount of illegal dumping occurs on the banks of the rivers from formal and informal settlement residents, as well as businesses. For those reasons, the President created the Presidential Commission on the Rehabilitation of the

Isabel and Ozama Rivers to engage in major solid waste cleanup efforts in preparation for expanded tourism opportunities.

In my view, there is an understandable urge to criticize the river cleanup efforts as self-serving. But, with informal settlement residents living with solid waste accumulations throughout their communities, I believe concerted civil society action may leverage the cleanup efforts to benefit their communities, as well.

CONCLUSION

The alternative solid waste management model of the environmental sanitation community foundations in the Distrito Nacional effectively mitigate the solid waste management challenges of informal settlements, as well as provide additional important community benefits. This solution satisfies neoliberal urban governance rationales, promotes community development, and meets the critical need of solid waste management in informal settlements.

Such alternative solid waste management models are well suited to neoliberal urban governance rationales due to their structure as private-public partnerships involving a high degree of citizen participation. In the case of Santo Domingo, through organizational capacity-building in informal settlements, the community foundation model could be replicated in other municipalities. In my view, however, such replication is contingent on recognition of the state's responsibility to ensure adequate solid waste management for all citizens in all areas, not just the formal city. It is no longer politically, environmentally, and economically viable to ignore the solid waste management challenges of informal settlements. I argue that, with sufficient political will, similar alternative solid waste

management models of the environmental sanitation community foundations can be replicated throughout Santo Domingo and Latin America.

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