Is governance enough? Assessing municipal capacity and CSO participation for complex service delivery

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Abstract. Municipal governments in the Global South vary in their ability to provide not only complex social services, like environmentally proper solid waste disposal, but even simple services, like trash collection from the streets. This paper examines whether variation in service provision outcomes is associated with service-specific local administrative capacity, locally embedded civil society organization (CSO) involvement, and local-level collaborative governance. Using a panel dataset of Peruvian municipalities, I find that while CSO engagement is associated with better outcomes for simple services, only greater public administration capacity is associated with higher service outcomes when the service is more complex. This suggests that CSOs may face difficulties to substitute for the state in the provision of technically complex services. Contrary to expectation, there is no association between collaborative governance patterns and service outcomes. These findings have implications for climate change mitigation and adaptation in Global South cities that tend to struggle with service-specific administrative capacity.

Keywords: Administrative capacity, Complex service performance, Civil society organizations, Collaborative governance, Global South, Peru.

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Decaying waste usually results from failed waste service provision. However, in the Global South, it is more likely to have clean streets without uncollected waste than properly disposed of waste that is not untreated or overflowing (de la Riva Agüero, citation redacted; Kaza et al. 2018). Beyond its sanitary implications, inadequately managed waste produces a highly contaminant greenhouse gas (GhG) and also blocks drains and sewages that complicate the consequences of heavy rain and flooding. This situation disproportionately affects municipalities with weak local governance capabilities to address complex service implementation needs, facing constant climate change-related threats (Anguelovski and Carmin 2011; Aylett 2015; Bulkeley and Betsill 2013, 140; Chu et al. 2016; IPCC 2015; Ostrom 2009).

Limitations in *general administrative capacity*, such as overall structure, human and financial resources, managerial experience and education, and information systems, constitute a significant impediment for municipal performance, particularly in the Global South (Andrews 2010a; Andrews and Boyne 2010; Avellaneda 2009, 2012; Bello-Gómez 2020a; Christensen and Gazley 2008; Grindle 2007; Ingraham et al. 2003; O'Toole Jr. and Meier 1999; Olvera and Avellaneda 2019; Rainey and Steinbauer 1999; Rajkumar and Swaroop 2008; World Bank 2003). However, less knowledge exists about *service-specific administrative capacity, at the office level,* and how it may matter when services increase in complexity. Similarly, it is unclear whether the *involvement of organized civil society groups* in service provision can help improve performance as services become more complex. Understanding how municipal administrative capacity, civil society organizations (CSO), and *collaborative governance* influence the delivery of services of distinct complexity is thus crucial. This article addresses this gap in the literature.

Solid waste management is an appropriate sector to examine this question for several reasons. Waste management is a critical municipal responsibility that has multiple social and economic implications. When it fails, it generates problems of public health and disease control; lowers property value and private investment; and, exposes municipal employees, usually low-income women, to risk (Akinbile and Yusoff 2011; Fobil et al. 2008; Kaza et al. 2018; Schübeler et al. 1996; UN-Habitat 2010). Waste management also has climate change mitigation and adaptation consequences. It produces methane, a GhG, from poor collection, disposal, incineration, and management that is significantly more contaminant than carbon dioxide (Ackerman 2000; Carmin et al. 2012; Gore and Robinson 2009; IPCC 2007, 212; Kaza et al. 2018, 118; Schreurs 2008; UNEP 2010; UN-Habitat 2010). Poorly managed waste in cities experiencing heavy rain and flooding associated with climate change can also obstruct drainage and sewage systems, destroy dumpsites, landfills, and other vital waste infrastructure, all of which worsen flooding and related damages (Alam and Rabbani 2009; Douglas et al. 2009; Kaza et al. 2018, 119). Thus, vulnerability to environmental disasters is further aggravated by the outcomes of waste mismanagement and poor local governance (Satterthwaite et al. 2009).

To adequately address these challenges locally, it is also crucial to understand that not all waste management services are equally intricate. Each entails specific administrative capacity, CSO involvement, and collaborative governance levels. This is reflected especially in the developing world where it is harder for municipalities to provide waste management services of greater complexity, such as properly disposing of waste in landfills or through recycling, relative to more simple ones, such as waste collection from the streets (Kaza et al. 2018). In practice, this translates into sufficiently clean streets, but also waste dumped in informal open holes with no control or treatment. To assess this puzzle, this study examines Peruvian municipalities using panel data methods, asking the following questions: Could service-specific municipal administrative capacity and CSO participation explain differences in performance between

simple and complex services? Could local collaborative governance drive performance disparities between services varying in complexity?

Recent evidence from around the world shows that municipalities in the Global South have relatively higher waste collection rates and lower proper waste disposal rates (Kaza et al. 2018). This is exemplified in a country like Peru that recently reported having important improvements in municipal waste collection (more municipalities collected 6.6% more waste in 2017 compared to 2015) while fewer municipalities used proper disposal methods such as landfills (22% in 2017, down from 31% in 2015) (INEI 2016, 422-424; INEI 2019, 448-450). Although Peru is considered an upper-middle income country based on its national GDP per capita, its municipal waste service delivery issues likely compare to lower-income countries in the Global South or to highly unequal countries around the world, given its wide spatial wealth disparities (Acemoglu and Dell 2010; Escobal and Torero 2005; World Bank 2005, 2008). Studying Peru, therefore, gives us insights into a range of country conditions.

This research contributes to advancing knowledge on issues related to local governance and complex service delivery in the Global South. It engages with research on administrative capacity, CSO participation, collaborative governance, service provision, and waste management in public administration and political science. This article contributes to this literature by, first, looking beyond general capacity measures to focus on service-specific administrative capacity; second, examining whether and how service-specific administrative capacity, CSO involvement, and collaborative governance influence performance when service complexity increases, and; third, analyzing how these three governance factors matter for public services with clear climate change implications in Global South municipalities. I theorize that while improvements in municipal waste management administrative capacity and local CSO involvement support simple service performance, such as waste collection, only more robust waste management administrative capacity, and not CSO participation, helps increase complex service performance, such as waste disposal. Local collaborative governance for decision-making should also theoretically raise simple and complex service performance. Preliminary results confirm the expectations about the role of administrative capacity and CSOs but not of local collaborative governance.

Literature Review and Hypotheses

Administrative Capacity

Scholars have shown convincingly that administrative capacity affects public organizations' performance (Andrews 2010a, 2010b; Andrews and Boyne 2010; Avellaneda 2009, 2012; Bello-Gómez 2020a; Boyne 2003; Boyne and Walker 2005; Christensen and Gazley 2008; Fernandez 2004; Fernandez and Moldogaziev 2013; Grindle 2007; Ingraham et al. 2003; Meier and O'Toole Jr. 2002; Nicholson-Crotty and O'Toole Jr. 2004; O'Toole Jr. and Meier 1999, 2003; Olvera and Avellaneda 2019; Rainey and Steinbauer 1999; Rajkumar and Swaroop 2008; World Bank 2003). This research focuses on *general administrative capacity,* operationalizing it through measures of organizational structure; human resource quality, quantity, and empowerment; personnel stability; available financial resources; leadership characteristics; managerial outputs and public managers' experience and educational attainment, and; information systems. These factors represent general administrative features of a public agency.

While the *general administrative capacity* of a bureaucracy is crucial for service performance, limited research has examined how the administrative capacity *within* the office or unit directly managing and implementing the service matters for performance, especially as service delivery responsibilities become more complex. Research on administrative capacity and service delivery, in both developed and developing countries, leaves unnoticed the degree to which relevant offices within a bureaucracy are *sufficiently specialized and equipped* to deliver specific services. Not understanding these distinctions reduces our knowledge about how this type of *service-specific administrative capacity* matters when analyzing services' performance, particularly if a municipal office can provide simple services but largely fails to provide more complex ones.

Thus, it is crucial to examine municipal waste collection offices' *internal* conditions to learn about the *direct* role of administrative capacity within the waste management team on the performance of services of different complexity. This information can be gathered at the office or unit level by looking at the administrative resources available, how appropriate or specialized these resources are for a specific service, and how they ultimately influence that service's performance, as classical organizational theory suggests (Galbraith 2002; Lawrence and Lorsch 1967; Mintzberg 1983; Thompson 1967). Features of organizational structure and procedures - including office or unit specialization - as well as their resources, may thus be critical for performance.

Looking specifically at waste services, one sees issues of varying levels of complexity, even within the same process (Batley and Mcloughlin 2015; Post 2018). At the simple end of waste management, the provision of collection services entails matching routines with available waste picking personnel, cleaning equipment, operational vehicles, and drivers. With a minimal level of planning, municipal managers can figure out how to structure the routines and distribute personnel to waste picking or driving and schedule the procurement of necessary equipment (Kaza et al. 2018; UN-Habitat 2010; USAID 2018). Since it is highly visible and thus socially and politically salient, its implementation and problem solutions also tend to be accomplished faster than other services.

By contrast, disposal services are complex. They require specialized infrastructure, such as a landfill, to treat and contain waste, or recycling facilities, to segregate and process reusable waste. Planning the implementation and management of these inputs require significantly more experienced and trained personnel and administrative units with more elaborate policy tools and procedural regulations (Abarca-Guerrero et al. 2013; Jeswani and Azapagic 2016; Kjeldsen et al. 2002). Moreover, these infrastructure projects take more time to put into operation and, since dumpsites or landfills are usually on cities' peripheries, disposal services may receive insufficient societal and political attention to push for solutions while triggering NIMBY (not-in-my-backyard) resistance. Differences in cost and human resource needs between waste collection and disposal services are also remarkable (Aleluia and Ferrão 2017; Hoornweg and Bhada-Tata 2012; Lohri et al. 2014; USAID2018).

This evidence raises questions about how much complexity municipal bureaucracies are capable of handling when delivering a service, such as waste disposal, in a context that increasingly requires them to do so urgently and efficiently. For instance, in Peru, 60% of all 1,874 municipalities collect waste daily or at least every other day, but 70% improperly dispose of it using informal open-air dump sites (MINAM 2016; INEI 2015). Differences between waste collection and disposal services are observed throughout the developing world (Kaza et al. 2018). Such comparison illustrates that it may not be accurate to assume that services provided

by a given public agency sharing the same administrative and governance capabilities, and managed by the same unit, will experience equal performance levels. Since services vary in complexity, their performance will likely be commensurate to unit capabilities. Therefore, examining conditions and processes *within municipal units* is essential to understand whether the available administrative capacity is sufficient to adequately provide services regardless of their complexity (Galbraith 2002; Hannan and Freeman 1984; Lawrence and Lorsch 1967; Mintzberg 1983; Pfeffer and Salancik 2003; Thompson 1967).

This classical, applied approach to administrative capacity centered on the within-unit service-specific administrative capacity is often overlooked by current approaches to the study of administrative capacity and performance, waste management, and climate action in a context of increasing environmental threats (Anguelovski et al. 2014; Hawkins et al. 2016; Kaza et al. 2018; Krause et al. 2016; Krause et al. 2019). Additionally, the challenges of climate change and its associated uncertainties are likely to aggravate already existing limitations in municipalities, including deeply embedded administrative structural and operational weaknesses. Contrasting the performance of waste services increasing in complexity and examining their corresponding administrative capacity is, therefore, a necessary contribution.

Based on the above, the first hypothesis suggests that:

> **H1**: Administrative capacity specific to waste management is positively associated with improvements in both waste collection performance (i.e., a *simple* service) and proper waste disposal performance (i.e., a *complex* service).

Organized Civil Society Involvement

While scholars have found that service performance is also enhanced with CSOs' participation (Auerbach 2017, 2020; Cammett and MacLean 2014; Jaramillo and Wright 2015) further research is necessary to elucidate if these improvements are possible when services increase in complexity. In the Global South, mainly in cities with less state presence and greater vulnerabilities, civil society tends to get involved through an array of mechanisms by organizing and demanding better services from local governments, sometimes participating in the decision-making or delivery processes of public services (Alam and Rabbani 2009; Auerbach 2020; Kruks-Wisner 2018; McNulty 2013; Remy 2004). In the case of waste, they get together to discuss and organize local action regarding service issues, including taking part in the sweeping, recycling, and disposing of waste (UN-Habitat 2010; USAID 2018). Many of those directly involved in some aspect of waste management, as in other public services, are people informally employed by the waste sector and vulnerable groups, usually low-income women and their children who are stigmatized as a result (de la Riva Agüero, citation redacted; Fredericks 2009; Kaza et al. 2018; USAID 2018; Vidanaarachchi et al. 2006).

Yet, improvements in service performance may not just result from any organized civil society actor's participation. It may depend on specific organizational features (Brinkerhoff and Wetterberg 2016; O'Meally 2013). Some research finds that adequate service delivery is more likely when civil society is organizationally strong, participatory, and rooted in the context in which it operates (Batley 2006; Brass 2016; Cammett and MacLean 2011, 2014; Clayton et al. 2000; Devas and Grant 2003; Putnam et al. 1993; Robinson and White 1997). This may be particularly the case in municipalities with high poverty levels and despite the number of present non-state actors (Torpey-Saboe 2015). The outcomes and relationship types, however, may depend on the specific service sector, objectives, context, and extent of the involvement of civil

society actors, and how government (or elite interest) reacts to their presence (Coston 1998; Jaramillo and Alcázar 2013, 2017; Nelson-Nuñez 2019). However, others have found that, to the contrary, non-state actor participation in service delivery – under particular circumstances – may reduce bureaucratic capacity by taking away this opportunity to hone its apparatus or through the resulting conflictual relationships (Brass 2016, 140; Edwards and Hulme 1996; Fernando 2011; Pfeiffer 2003; Whaites 1998). Nonetheless, this perception is usually based on the assumption that civil society actors are organized and locally embedded, which is not always the case.

Thus, there are no guarantees that civil society participation will enhance delivery outcomes, especially for the most vulnerable sectors and if the most connected and wealthy are more proactively engaged (Beall 2001; Devas and Grant 2003; Grillos 2017; Jaramillo and Alcázar 2013, 2017; McNulty 2013; Sheely 2015; Wood 1997). This means that simply examining participation will not directly elucidate questions regarding civil society's role in service delivery. All these findings imply that to better understand the role on service delivery of societal actors' involvement, research may need to assess their organizational characteristics, such as how active, participatory, and embedded in their context.

In the context of waste management, the effectiveness of CSO involvement in service delivery performance may, therefore, depend on the group's organizational strength and embeddedness. Locally-based CSOs with more robust organizational capabilities may have more negotiating power with the municipal waste office. Such CSOs could thus have a more influential voice in decision-making and municipal responsiveness to their concerns, benefitting the performance of the waste service receiving attention. Therefore, it is possible to observe performance differences if CSO participation is higher in one service (or stage) of waste management, such as waste collection, relative to another service, like waste disposal, in favor of the former. Yet, service performance might also be contingent on the complexity of the waste service itself, regardless of the CSO's involvement and embeddedness.

A key missing aspect from the literature is acknowledging that services have varying levels of complexity, even within the same process, as in waste management (Batley and Mcloughlin 2015; Post 2018, 124-125). This study challenges the assumption that the effect on service performance of CSO involvement remains unchanged even if the complexity of a service varies. How participatory, active, and embedded in the community a CSO is, and how these organizational characteristics match the complexity of a service, may be necessary since different services may require different organizational features, particularly if service complexity changes. Therefore, the second hypothesis posits:

> **H2**: The presence of active locally-embedded CSOs is positively associated with improvements in waste collection performance (i.e., a *simple* service) but is *not* associated with increased proper waste disposal performance (i.e., a *complex* service).

Collaborative Governance

The interaction between administrative capacity and CSOs is crucial, which entails examining how collaborative governance may explain waste service performance in general, on the one hand, as well as performance differences when contrasting waste services of distinct complexity, on the other. A range of governance relationships between government and civil society have been studied extensively to explain performance (Batley 2006, 2011; Brinkerhoff and Brinkerhoff 2011; Brinkerhoff 2002; Coston 1998; Denhardt and Denhardt 2015; Emerson et al. 2012; McGuire 2006; Osborne and McLaughlin 2004; Ostrom 1996). This interaction has

been mainly approached in the form of the *collaboration*, or coproduction, of public services, which generally occurs when both paid public employees and (usually unpaid) service users (individuals or groups) make significant, active, and explicit contributions to the decision-making or provision of a service (Bovaird 2007; Bovaird and Loeffler 2012; Brandsen and Honingh 2016; Brandsen and Pestoff 2006; Brass 2016; Nabatchi et al. 2017; Nabatchi et al. 2016; Osborne et al. 2013; Ostrom 1996; Thomson and Perry 2006). When governments (national or local) fail to provide essential services adequately, non-state actors organize at the local or community levels to collaborate with municipal bureaucracies to find a way to provide needed services (Batley and Mcloughlin 2010; Brass 2012; Cammett and MacLean 2011; Cheng 2019a; Clayton et al. 2000; Post et al. 2017; Robinson and White 1997; Zambrano-Gutiérrez et al. 2017). However, some research finds that collaboration does not always lead to better service delivery performance. In part, this is due to administrative capacity limitations of local governments, preventing them from implementing participation venues as well as CSOs' lack of involvement, precluding proper collaboration with the communities needing these services the most (Agranoff 2007, 157; Babiak and Thibault 2009; Brass et al. 2012; Brinkerhoff 2002; Cammett and MacLean 2011; Jaramillo and Alcázar 2017; Loeffler and Bovaird 2016; McNulty 2019; Page et al. 2015).

The delivery of services with direct societal implications, like waste collection and disposal, needs strong, collaborative governance relationships between a municipal government and civil society, where the latter participates in decision-making processes and coproduces local policy measures and budgeting plans. This interaction is expected to be particularly true in local governments facing multifaceted limitations, which is common in the Global South. Collaborations with a strong societal presence may increase the likelihood that issues that would otherwise go unaddressed, due to their complexity or lack of salience, receive adequate attention.

Nonetheless, a limitation of the collaborative governance literature is that it tends to predominantly focus on the study of collaboration characteristics, determinants of collaboration and coproduction outcomes, civil society involvement types and their relationship with state agencies (Ansell and Gash 2018; Austin 2000; Bovaird 2007; Bryson et al. 2006, 2015; Cheng 2019b; Loeffler and Bovaird 2016; Mcloughlin 2011; Nelson-Nuñez 2019; Selsky and Parker 2005; Zambrano-Gutiérrez et al. 2017). While this literature considers different governance scenarios, it does not assess in detail public organizations' administrative capacity nor service complexity when explaining how governance influences service provision. This article explores these gaps in the literature. This discussion leads to a third hypothesis that proposes:

> **H3**: Local collaborative governance with civil society participation *in decision-making* is positively associated with performance improvements in *both* waste collection and proper disposal services.

Data and Methods

To test these hypotheses, this study uses a unique panel dataset of all 1,874 Peruvian municipalities covering the years 2014, 2016, and 2018. It uses two-way fixed effects regression methods to identify how variations in municipal waste management administrative capacity, the presence of active locally embedded CSOs, and local collaborative governance affect the performance of waste collection and proper waste disposal, controlling for general municipal administrative capacity, as well as political, socioeconomic, and geographic factors.

The panel uses municipal-level data from the Peruvian public sector. The data come from multiple public agencies, such as the Ministry of Environment, Ministry of Finance, National Jury of Elections, and National Statistics Institute of Peru. The primary sources of information are the National Registry of Municipalities of Peru, Population Estimations and Projections by Department, Province, and District, Provincial and District Poverty Map, and National Census, of the National Statistics Institute; the Solid Waste Management Information System, of the Ministry of Environment; the Government Information Database, of the National Jury of Elections, and; the government budget spending database, of the Ministry of Finance.

Dependent Variables

The two dependent variables measure *solid waste collection* and *solid waste disposal performance,* as suggested in the waste management literature (Abarca-Guerrero et al. 2013; Aleluia and Ferrão 2016; Kaza et al. 2018; Shekdar 2009; UN-Habitat 2010; USAID 2018).

Collection performance is evaluated through the extent to which waste is collected, focusing on whether the streets are clean after waste is gathered. This is operationalized in two ways. One approach measures *collection frequency*, which is the number of times waste is collected from the streets. It reflects the frequency, in days per week, in which collection routines are deployed around the municipality to gather waste from households and public spaces. The other measure captures performance through the *quantity of waste collected* by the municipality. It is operationalized by the reported average amount of waste collected, in metric tons per day, per 1,000 people.[1]

Disposal performance is defined as the degree to which waste is properly disposed of. *Proper disposal* performance is operationalized by adding the percent of waste disposed of in landfills and through recycling methods, out of the total waste disposed of by each municipality. Improper disposal methods include dumping waste on informal open-air holes and burning.

Independent Variables

Three independent variables of interest are waste management administrative capacity, the presence of active, locally embedded CSOs, and local collaborative governance.

Waste management administrative capacity refers to a (municipal) bureaucracy's internal capabilities that support the planning, management, and implementation of waste management policy to effectively and efficiently achieve its expected outcomes. Based on the approach of classical organizational theory scholars (Galbraith 2002; Lawrence and Lorsch 1967; Mintzberg

[1] Municipal waste quantity data for 2014 were reported in one of six categories, some of which had wide quantity ranges, such as "from 50 to less than 100 tons per day" (category five). To obtain a more accurate waste collection quantity value for this year, three estimation steps were taken. First, the growth or decline rate from 2016 to 2018 was calculated and used to obtain a 2014 collection quantity. Second, those cases with an estimate from the first step that was below or above their selected category range in 2014 were adjusted to the mid-point of that category. This was applied only to those cases belonging to categories one through three (below one ton/day, one to less than three tons/day, or three to less than nine tons/day, respectively). However, a third step was applied to those cases with an estimated value outside their 2014 quantity range and that fell under category four, five, or six that year (nine to less than 50 tons/day, 50 to less than 100 tons/day, or 100 or more tons/day, respectively). This involved a random data check to confirm that the resulting estimates approximated their 2016 and 2018 values and were within their selected 2014 waste collection quantity category.

1983; Thompson 1967) and recent research suggesting the use of more specific measures of capacity (Krause et al. 2016; Krause et al. 2019), this concept is operationalized by examining two components. First, the degree to which the municipal office responsible for waste management is internally *specialized*, which means having differentiated management features or components for this service (i.e., organizational structure, internal and external coordination processes, policy documents). Exploratory factor analysis is used to capture the latent concept of waste management administrative capacity through different dimensions. A *waste management administrative capacity index* is thus used in the analysis based on variables measuring the existence of waste management and environmental management policy instruments, structure, and decision-making space (see Table A1 in the Appendix).

Second, two additional key variables are included in the model to capture administrative capacity, which are specifically related to each waste service. The concept of *service equipment*, measures whether the municipality has differentiated operational resources or components (i.e., trained personnel, operational office resources, budget allocation, operational waste trucks) for each of the two waste services. Given the data available, this research operationalizes this concept through the number of *waste collection vehicles*, in the models using waste collection as the dependent variable, and the number of *waste disposal equipment*, for the models assessing waste disposal. The waste collection vehicles variable adds the total vehicles the municipality has, such as the number of collection trucks (different types), tricycles, and motorcars, all of which are used to provide this service. The waste disposal equipment variable computes the total number of gatehouses, weight scales, waste loaders, and wheelbarrows employed for this service.

Active and locally embedded CSOs is conceptually defined as whether locally organized and active civil society groups (i.e., CSOs) engage community members (Cammett and MacLean 2014; Putnam et al. 1993). Therefore, it is operationalized by measuring the participation of neighborhood committees, which have evident roots in the community and are actively involved in local issues (Jaramillo and Alcázar 2013). Exploratory factor analysis is performed using different dimensions of neighborhood committee participation to more fully capture the concept of active, locally embedded CSO presence. A *neighborhood committee participation index* is constructed using components of population participation and neighborhood committee organization and engagement (see Table A2 in the Appendix).

An alternative measure is included to examine another type of active, locally embedded CSO. It assesses the concentration, in number of organizations per 1,000 people, of poverty alleviation CSOs in the municipality. These local groups include community kitchens, nutrition organizations (i.e., “glass of milk”), mothers’ clubs, youth organizations, and others. All exclusively provide social services and support to low-income families, mostly in poverty, usually single mothers and their children.

Collaborative governance evaluates the extent to which civil society participates in local decision-making arenas and coproduce policies with their local governments. It refers to the collaboration, arrangement, or relationship that a local government and civil society have on issues of local importance, that usually include discussions about the provision of public services, such as waste management (Bovaird and Loeffler 2012; Brandsen and Honingh 2016; Nabatchi et al. 2017; Ostrom 1996). Exploratory factor analysis is used to create the *collaborative governance index* capturing participatory governance and policy coproduction through Local Coordination Committees composed of mayors, local council members, and civil

society representatives and via other mechanisms of civil society-government interaction for decision-making (see Table A3 in the Appendix) (McNulty 2011, 2019).

Control Variables

Other variables are included in the analysis to control for alternative explanations of the two dependent variables. The first set reflects the municipality's administrative capacity as a whole, or the general administrative capacity. Exploratory factor analysis is used to capture a latent variable for *general administrative capacity*, used as an index (see Table A4 in the Appendix). It includes measures of the proportion of its total employees out of the total population, number of computers with internet access per municipal worker, whether the municipality has a cadastre of its jurisdiction and a cadastral information system, total municipal budget per capita, and different binary variables assessing its capacity to manage its results-based budgeting (RBB) program (Boyne 2003; Christensen and Gazley 2008; Ingraham et al. 2003; Rainey and Steinbauer 1999).

Since empirical research finds that the political capital, experience, and education of the mayor may help explain the effect of local politics on the performance of waste management (Abarca-Guerrero et al. 2013; Avellaneda 2012; UN-Habitat 2010), the analysis controls for the share of the electoral vote obtained by the elected mayor in the 2011 and 2016 municipal elections. This measure captures their electoral support during their tenure as mayors for the 2011-2014 and 2015-2018 periods, respectively. The model also controls for the influence of mayoral reelection, whether the mayor's party is a local or regional party (as opposed to a major national party or alliance), and if the mayor is female (Jaramillo and Alcázar 2017).

Peruvian municipalities have significantly diverse contexts across the country's eight ecological and geographic areas, mostly associated with higher altitudes and distinct weathers and natural environments. Most prosperous cities in the country are located on the Pacific coast (Escobal and Torero 2005). Therefore, a binary variable is included to control for such differences and its potential influence on the two dependent variables. Moreover, to control for socioeconomic factors, the models account for municipal poverty levels and total population. Descriptive statistics are included in Table 1, and in the Appendix the description of variables in Table A5 and the correlation matrix in Table A6.

Table 1. Descriptive Statistics

Variable Name	N	Mean	St. Dev.	Min	Max
Dependent Variables					
Waste Collection Frequency (days/week)	5,561	3.97	2.58	0	7
Waste Collection Quantity, per 1,000 People (metric tons/day)	5,435	0.56	2.94	0	181.03
Waste Properly Disposed (%)	5,593	27.78	40.51	0	100
Independent Variables					
Waste Management Capacity (Overall)					
WM Admin. Capacity Index	5,525	0.00	0.85	-0.80	2.26
WM Budget (per Capita $)	3,998	11.57	39.85	0	996.06
Waste Management Capacity (Specific for each Service)					
Waste Collection Vehicles (per square mile)	5,591	0.08	0.74	0	27.75
Waste Disposal Equipment (per 1,000 people)	5,561	0.12	0.64	0	33.11
Civil Society Participation					
Neighborhood Committee Participation Index	5,507	0.00	0.94	-0.95	1.18
CSO Concentration	5,561	6.01	4.43	0	46.65
Governance					
Collaborative Governance Index	5,323	0.00	0.74	-1.04	2.93
Controls					
General Admin. Capacity Index	5,362	0.00	0.79	-1.17	2.38
Mayor Reelected	5,416	0.18	0.38	0	1
Mayor's Vote Share	5,513	34.98	10.46	0	91.67
Local Party	5,513	0.63	0.48	0	1
Mayor Female	5,417	0.03	0.17	0	1
Poverty	5,555	43.21	21.79	0.17	97.38
Total Population	5,561	16,410	52,099	151	1,123,889
Ecological Region	5,561	3.59	1.95	1	8

Estimator

All models discussed are ordinary least squares regressions using two-way fixed effects by province and year. Differences between municipalities explain most of the variation in the dependent variables, and not much variation is expected at the municipal level in three years. Therefore, using fixed-effects at the municipal level would remove most of that variation, limiting possible explanations about how municipal characteristics relate to the dependent variables (Bello-Gómez 2020b; Krause et al. 2006). A two-way ANOVA test was performed to examine the dependent variables' variation explained by differences in municipalities and years. These results show that differences between municipalities explain 81.4% of the variation in waste collection frequency, 36.6% of the variation in waste collection quantity, and 59.01% of the variation in proper waste disposal. The decision is thus to account for unobserved location-specific time-invariant correlations with regressors by using fixed-effects at the provincial level.[2] However, given the differences in characteristics between municipalities in the same province, it is more likely that variation in the independent variables does exist at that level. Using that rationale, it is more appropriate to use fixed effects via provincial dummy variables instead of municipal dummy variables. Following that logic, standard errors are also clustered on provinces to use fewer clusters and adjust for correlations between observations across different years and municipalities in each provincial group (Cameron and Miller 2015).

Findings

The findings from the main regression models are presented in Table 3. It contains two models of waste collection performance, one assessing *collection frequency* (column 1) and another *collection quantity* (column 2), and one model of waste disposal performance, evaluating *proper disposal* (column 3).

The main variables of interest are the waste management administrative capacity index, including the measures of waste management capacity specific to each service; neighborhood committee participation index, and; collaborative governance index. The waste management capacity index is statistically significant in the *collection frequency* and *proper disposal* models, with positive coefficients, but not significant in the *collection quantity* model. This suggests that, all else equal, strengthening administrative capacity, at the municipal waste office level, is associated with increased waste collection frequency and proper waste disposal in landfills or through recycling methods. A one standard deviation increase in waste management administrative capacity is associated with a half-day increase in collection frequency per week and an additional 2 percentage points of waste properly disposed annually. Waste management capacity thus improves the performance of both simple and complex waste services. Similarly, the specific waste management capacity measures are positive and significant on all three models, confirming that these capacity equipments also raise waste service performance. Adding one more waste collection vehicle per square mile is associated with an increase in collection frequency of 0.11 days per week, or about 2.5 more hours. An extra collection vehicle per square mile also increases the amount of waste collected per day in about 0.04 metric tons per day per 1,000 people, which translates into roughly 40 kilograms or 88.2 pounds. Likewise, an extra

[2] Peru has two types of municipalities or local governments: Provincial municipalities, which are similar to US counties, and district municipalities, equivalent to US cities. They are distributed across 25 regional governments (comparable to US states but with less political and fiscal autonomy). However, all reference to *municipalities* in this study is about the latter type of local government.

disposal equipment per 1,000 people improves proper disposal performance by 2.6 percentage points each year.

The participation of active, locally embedded CSOs, such as neighborhood associations, is only positively and significantly associated with improved collection frequency performance. A one standard deviation increase in the neighborhood committee participation index is associated with an increase of 0.16 days per week in collection frequency, or approximately 4 hours per week. The participation of neighborhood associations does not show a statistically significant association with proper disposal performance, even though the coefficient is positive. However, the other measure of CSO participation, examining the role of the concentration of poverty alleviation local organizations per 1,000 people, is negatively and significantly associated with collection frequency but positively with collection quantity. This type of CSO shows no association with proper disposal, although the coefficient is positive. These results are interpreted in the discussion section.

Collaborative governance, on the other hand, is not associated with any of the three dependent variables, although it has negative coefficients on both waste collection measures and a positive coefficient on the proper disposal outcome variable.

Results from the control variables show a significant and positive association between the general administrative capacity of the municipality and collection frequency, but none with collection quantity and proper disposal performance. A one standard deviation increase in the general administrative capacity index is associated with roughly 3.8 hours added to the collection frequency routine each week. However, an inverse and significant association is observed between mayors' vote share and collection frequency while a positive and significant association is found with proper disposal. Poverty is statistically significant and only negatively associated with collection quantity. The ecological region variable is only significant and positively associated with collection frequency when comparing coastal municipalities using the other regions as base category.

Table 3. Two-Way Fixed Effects Regressions for Waste Collection and Disposal Performance

	Waste Collection		Waste Disposal
	Frequency (days/week)	Quantity (metric tons/day, per 1,000 people)	Properly Disposed (%)
Waste Management Capacity (overall)			
WM Admin. Capacity Index	0.521***	-0.036	1.958*
	(0.06)	(0.06)	(0.98)
WM Budget (per capita $)	0.002+	0.001	-0.001
	(0.00)	(0.000)	(0.01)
Waste Management Capacity (specific for each service)			
Waste Collection Vehicles (per sq. mile)	0.105***	0.037***	
	(0.03)	(0.01)	
Waste Disposal Equipment (per 1,000 people)			2.621+
			(1.34)
Civil Society Participation			
Neighborhood Committee Participation Index	0.162***	0.061	0.374
	(0.05)	(0.04)	(0.75)
CSO Concentration	-0.057**	0.013+	0.05
	(0.02)	(0.01)	(0.27)
Governance			
Collaborative Governance Index	-0.026	-0.058	0.792
	(0.06)	(0.06)	(1.05)
Controls			
General Admin. Capacity Index	0.158**	0.074	0.441
	(0.05)	(0.08)	(0.84)
Mayor Reelected	-0.067	-0.048	1.051
	(0.15)	(0.05)	(2.56)
Mayor's Vote Share	-0.021***	0.000	0.156+
	(0.01)	(0.00)	(0.09)
Local Party	-0.009	0.048	0.036
	(0.10)	(0.06)	(1.79)
Mayor Female	-0.105	0.028	-3.284
	(0.23)	(0.09)	(4.04)
Poverty	-0.006	-0.006**	-0.048
	(0.01)	(0.00)	(0.07)
Total Population	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Ecological Region (coast)	1.258***	0.052	-8.343
	(0.28)	(0.13)	(6.06)
Intercept	6.167***	0.551**	48.841***
	(0.41)	(0.20)	(6.32)
Observations	3,612	3,586	3,612
R-squared	0.40	0.07	0.30
BIC	15,208.83	14,403.10	36,007.95

Standard errors in parentheses
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Discussion

The results presented here support the first four hypotheses that waste management administrative capacity and active, locally rooted CSOs have a positive association with improvements in simple waste collection performance while only waste management administrative capacity has a positive association with complex waste disposal performance. CSOs do not seem to have a role in proper waste disposal performance. However, these findings reject hypothesis 5 that collaborative governance is positively associated with performance improvements in both waste collection and disposal services, regardless of their complexity differences.

This suggests that the service-specific administrative capacity of municipal waste offices, captured through an index and waste capacity equipments, has crucial implications for understanding the performance of both simple and complex waste management services. Unlike general municipal administrative capacity improvements that enhance only simple waste service provision, waste management administrative capacity illustrates that improved waste office *specialization and equipment* benefits *both* collection frequency and proper disposal services. Having relevant waste and environmental planning and policy instruments, as well as specific equipment, are critical for simple and complex service performance. This is in contrast to non-direct, general municipal capacity factors such as more personnel, technological hardware and software, or a results-based budgeting program.

As occurs across the Global South, many municipalities in Peru suffer to provide complex disposal services while keeping their streets clean. While this study's results show that service-specific capacity is critical other evidence finds that, on the ground, the primary waste-related duties of municipal waste offices are to oversee the monthly hiring of trash collection teams, the occasional acquisition of their gears (e.g., mouth masks, uniforms, boots, gloves), and solving other administrative issues (de la Riva Agüero, citation redacted). These shortcomings and collection-centered waste operations are further aggravated by the fact that some municipalities simultaneously share their waste duties with the provision of other public services and lack trained personnel (de la Riva Agüero, citation redacted). In this context, waste administrators make decisions regarding the delivery of services of different complexity levels. Therefore, examining waste offices' internal conditions and addressing limitations of service-specific waste management administrative capacity may have consequential results to correct these performance gaps.

On the other hand, while it is generally expected that the active involvement of well-organized civil society actors, particularly those embedded in the communities in which they operate, is likely to produce better performance outcomes for all public services, the initial results reject those assumptions. The results indicate that the active involvement of locally embedded CSOs, such as neighborhood associations, may support simple service performance, such as waste collection frequency, but their participation's influence disappears for complex services. This could mean that these CSOs' actions are generally centered on simple collection frequency and, more importantly, that they may be able to effectively substitute for the state when services are simple but not when services are complex. Given the low waste management administrative capacity of municipal offices, on average, it is likely that some type of substitution occurs for simple collection frequency. However, it is possible that these neighborhood associations capabilities' may not compensate for the more specialized and technically intricate administrative capacity needs of complex proper disposal. This suggests that

while strong, service-specific administrative capacity might be necessary to deliver complex services, CSO participation may not suffice to help improve its performance. Two additional mechanisms could also help explain this result, unrelated to CSO's capabilities. One is that limited service-specific administrative capacity in waste units may preclude their managers from planning the involvement of CSOs in complex proper disposal (de la Riva Agüero, citation redacted). Another reason is gender and socioeconomic discrimination, that may bias waste managers' perception against CSOs led by women and low-income people (de la Riva Agüero, citation redacted; Fredericks 2009; Kaza et al. 2018). Further research on the mechanisms of CSO involvement in collection and disposal services would elucidate these findings.

Another interesting finding is that these local CSOs are important to increase collection frequency but not collection quantity. This might mean that when CSOs participate as collection teams, the teams go out more often to pick up trash, but that the increased frequency does not necessarily equate to a greater quantity of waste collected. This might mean that municipalities face equipment limitations that affect the quantity of waste they can carry each time. This is a possible explanation given the positive and significant association that collection vehicles have with collection quantity, showing that more vehicles likely improve the amount of waste collected. Another possibility is that local governments are actually sending out collection teams to appease public demands for collection through visible waste picking teams but are not necessarily doing anything about increasing collection quantity. The limited human resource capabilities that municipal waste offices generally have may also preclude them from rigorously supervising how well collection teams carry out their routines, how much of the waste is collected, or the proportion of a municipality's jurisdiction that is actually covered by these teams. Additional research is needed to assess these possibilities.

The concentration of poverty alleviation CSOs is positively correlated with municipal poverty levels, indicating that it is likely that poorer local governments have more such organizations, which in turn have more members. Some poor municipalities also tend to employ their most vulnerable residents to deliver waste management services, usually related to collection (de la Riva Agüero, citation redacted). Therefore, the fact that an increase in the concentration of these CSOs, and in turn of their members, is negatively associated with collection frequency but positively with collection quantity, with very small coefficients, suggests that their involvement in waste collection could be more efficient because, as a collective, they likely need to go out less often and actually help collect more waste when involved in this service. As a labor-intensive activity, waste collection quantity might benefit from more people willing and available to do the job with more commitment because of their livelihood needs and community or organizational cohesiveness, which explain these findings.

One possible reason why collaborative governance is not associated with waste collection and disposal performance is that waste management issues are possibly not a matter of pressing discussion in local deliberative spaces. At the very least, the waste-related topics brought to the table are not relevant to produce a significant influence on waste service performance, regardless of complexity. Topics such as municipal infrastructure construction, poverty-alleviating measures, local economic development and support for local businesses, and budget allocation to other critical services may have more salience. However, research on Peruvian local collaborative decision-making finds that collaborative governance does not function effectively due to two reasons: first, the high participation costs faced by poor people and the organizational limitations of the CSOs representing them and, second, municipalities' lack of capacity to manage these partnerships or implement agreements (Jaramillo and Alcázar 2017; McNulty

2011, 2019). Additional features of collaborative governance and more nuanced analyses by regional or municipal subgroups are needed to improve its measurement.

Conclusion

One of the most pressing questions of our time is how governments can better respond to climate change. This is particularly true for municipalities in the Global South, which face constant climate threats with weak local capabilities to address them. They suffer severe weather hazards that have increased their vulnerability. These impacts surpass the local capacity to address them effectively via service provision, despite the involvement of organized civil society actors that tend to enhance performance and increased collaborations. Additionally, service performance seems to vary depending on the complexity level of the service itself. However, scarcely any public administration or political science scholarship has examined how local governance factors, such as service-specific administrative capacity, the participation of locally embedded CSOs, and local collaborative governance, affect performance when services become more complex. Complex service provision is especially demanding for struggling municipalities that attempt to creatively take action with limited administrative capacity to specifically deliver them. This difficulty may extend to CSOs engaged in public service issues in their communities, challenging the notion that service performance improves when they are locally involved, regardless of service complexity.

Given the implications of municipal waste management for climate change mitigation and adaptation, this article uses waste service provision as a case to examine how variation in local governance factors may have differential effects on the performance of two services of distinct complexity. Particularly, it compares the performance of a simple service, waste collection from the streets, and a complex service, proper waste disposal, to understand how service-specific municipal administrative capacity, organized civil society involvement, and collaborative governance influence the performance of complex waste services. The empirical analysis of Peruvian municipalities shows that while more robust waste offices and the participation of neighborhood-based CSOs likely increase simple service performance, only waste office strengthening but not the involvement of neighborhood-based CSOs help improve complex service performance. Local collaborative governance with civil society participation in the decision-making does not seem to support either waste service performance.

The policy implications of these findings are that strengthening service-specific administrative capacity in local governments is fundamental to provide increasingly complex services with implications for mitigating and adapting to climate change in the Global South. Similarly, for collaborative governance to matter in this context, municipal administrators and CSOs should prioritize simple and complex services in deliberative spaces, focusing on cost-effective and climate change-friendly policy measures. Therefore, strengthening CSO and municipal capacity to manage collaboration partnerships and carry out agreements seems critical, particularly in vulnerable localities.

Appendix[3]

Table A1. Waste Management Administrative Capacity Index

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
WM Integral Plan	0.3232	0.3776	-0.0641	-0.003	0.7488
WM Plan	0.1798	-0.2234	0.3475	0.0204	0.7966
WM Collection System	0.1702	0.323	-0.054	-0.0042	0.8638
WM Transformation Program	0.138	0.2208	0.1053	0.0733	0.9158
Other WM Instruments	0.158	0.006	0.1406	-0.02	0.9548
Environmental Office	0.5058	0.1054	0.2856	-0.0358	0.6502
Environmental Diagnostic	0.6715	0.0572	0.0748	0.0301	0.5394
Environmental Action Plan	0.5822	0.014	0.0185	0.0307	0.6595
Environmental Policy	0.674	0.0364	-0.0037	-0.0034	0.5444
Environmental Commission	0.58	0.1595	0.0731	-0.0547	0.6298
Eigenvalues	2.17699	0.37779	0.12973	0.01232	

Table A2. Neighborhood Committee Participation Index

Variable	Factor 1	Factor 2	Uniqueness
Participatory Management	0.0985	0.1095	0.9783
Neighborhood Committee Pop. Participation	0.6528	0.0879	0.5662
Neighborhood Committee Approved	0.915	0.0303	0.1618
Neighborhood Committee Active	0.8853	0.0068	0.2163
Eigenvalues	2.06188	0.01561	

Table A3. Collaborative Governance Index

Variable	Factor 1	Factor 2	Factor 3	Uniqueness
LCC Implementation	0.232	0.6184	-0.006	0.5637
LCC Sessions	0.6695	0.1004	0.0609	0.538
LCC Sessions Number	0.5843	0.0208	-0.0528	0.6554
LCC Local Plan	0.2334	0.246	0.2643	0.8152
LCC Participatory Budgeting	-0.0554	0.6443	0.0611	0.5781
Local Plan Pop. Participation	0.017	0.081	0.4285	0.8095
Collaborative Budgeting Pop. Participation	0.0066	0.0159	0.4634	0.7849
Local Econ. Plan Pop. Participation	0.0278	0.0273	0.3943	0.843
Eigenvalues	1.19056	0.67105	0.5506	

[3] Tables A1 through A4 show rotated factor loadings from exploratory factor analysis.

Table A4. General Administrative Capacity Index

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
Muni. HR (% of total pop.)	0.043	-0.0456	-0.0284	0.5209	0.724
Online PCs (per muni. worker)	-0.0024	0.0859	0.0355	-0.0811	0.9848
Cadastre Info. Systems	0.0983	0.102	0.4864	-0.0603	0.7397
Municipal Cadastre	0.0505	0.078	0.4571	-0.0525	0.7796
Global Final Muni. Budget (per capita $)	-0.0225	-0.0183	-0.07	0.4814	0.7625
Results-Based Budgeting (RBB) Management Capacity					
Goal Match	0.1783	0.4954	0.1202	-0.0538	0.7055
Indicators	0.2007	0.5785	0.0598	-0.024	0.6209
RBB Units	0.2499	0.5228	0.063	-0.0045	0.6602
Mid-term Goals	0.2569	0.5204	0.0112	-0.0292	0.6622
Plan-Budget Correspondence	0.2511	0.5528	0.0409	-0.0063	0.6296
Statistics	0.4356	0.2652	0.0588	-0.0326	0.7354
Performance Indicators	0.5003	0.2516	0.0748	0.0235	0.6803
Budget Transparency	0.3861	0.2327	0.2376	-0.0017	0.7403
Donor Support	0.4014	0.2522	0.0528	-0.002	0.7724
HR Incentives	0.5203	0.199	-0.0147	-0.0083	0.6894
Service Delivery Quality	0.5286	0.2697	0.0819	0.0012	0.6411
Public Consultations	0.5277	0.18	0.0137	0.0149	0.6887
Public Service Coverage	0.5132	0.2608	0.0698	0.0177	0.6635
Eigenvalues	3.65194	0.62508	0.46305	0.37996	

Table A5. Description of Variables

Variable Name	Variable Description	Data Source[1]
Dependent Variables		
Waste Collection Frequency	No. of days per week waste is collected (days/week)	RENAMU
Waste Collection Quantity (per 1,000 people)	Average amount of waste collected daily per 1,000 people (metric tons/day)	RENAMU
Waste Properly Disposed	Percent of waste disposed of in landfills or recycled, out of the total disposed through reported methods	RENAMU
Independent Variables		
Waste Management Capacity (Overall)		
WM Admin. Capacity Index	Factor score of waste management administrative capacity (all waste services)	RENAMU
WM Integral Plan	Muni. has an Integral Plan for the Environmental Management of Solid Waste (1=Yes)	RENAMU
WM Plan	Muni. has a solid waste management plan (1=Yes)	RENAMU
WM Collection System	Muni. has a solid waste collection system (1=Yes)	RENAMU
WM Transformation Program	Muni. has a solid waste transformation program (1=Yes)	RENAMU
Other WM Instruments	Muni. has other solid waste removal management instruments (1=Yes)	RENAMU
Environmental Office	Muni. has environmental unit or office (1=Yes)	RENAMU
Environmental Diagnostic	Muni. has environmental diagnostic (1=Yes)	RENAMU
Environmental Action Plan	Muni. has local environmental action plan (1=Yes)	RENAMU
Environmental Policy	Muni. has environmental policy (1=Yes)	RENAMU
Environmental Commission	Muni. has Local Environmental Commission (1=Yes)	RENAMU
WM Budget (per capita $)	Muni. budget spent on waste management, per capita (USD)	MEF
Waste Management Capacity (Specific for each Service)		
Waste Collection Vehicles (per sq. mile)	Number of waste collection vehicles, per square mile	SIGERSOL, INEI
Waste Disposal Equipment (per 1,000 people)	Number of waste disposal equipments, per 1,000 people	SIGERSOL, INEI
Civil Society Participation		
Neighborhood Committee Participation Index	Factor score of neighborhood delegate committee participation	RENAMU
Participatory Management	Population participates in municipal management (1=Yes)	RENAMU
Neighborhood Committee Pop. Participation	Population participates in Neighborhood Delegate Committees (1=Yes)	RENAMU
Neighborhood Committee Approved	Neighborhood Delegate Committee was officially approved by the Municipal Council (1=Yes)	RENAMU
Neighborhood Committee Active	Neighborhood Delegate Committee is active (1=Yes)	RENAMU

Variable Name	Variable Description	Data Source[1]
CSO Concentration	Number of poverty alleviation CSOs, per 1,000 people	RENAMU
Governance		
Collaborative Governance Index	Factor score of collaborative governance	RENAMU
LCC Implementation	Muni. implemented activities of the Local Coordination Committee (LCC) (1=Yes)	RENAMU
LCC Sessions	LCC sessions held	RENAMU
LCC Sessions Number	Number of LCC sessions held	RENAMU
LCC Local Plan	LCC participates in drafting the Concerted Muni. Development Plan (1=Yes)	RENAMU
LCC Participatory Budgeting	LCC participates participatory budgeting processes (1=Yes)	RENAMU
Local Plan Pop. Participation	Population participates in Concerted Muni. Development Plan (1=Yes)	RENAMU
Collaborative Budgeting Pop. Participation	Population participates in collaborative budgeting processes (1=Yes)	RENAMU
Local Econ. Plan Pop. Participation	Population participates in the formulation/control of local economic plans (1=Yes)	RENAMU
Controls		
General Admin. Capacity Index	Factor score of the overall municipal administrative capacity	RENAMU
Muni. HR (% of total pop.)	Total municipal personnel, as % of total population	RENAMU
Online PCs (per muni. worker)	Number of computers with internet access, per municipal worker	RENAMU
Cadastre Info. Systems	Muni. has a cadastre information system (1=Yes)	RENAMU
Municipal Cadastre	Muni. has a cadastre or has conducted a cadastral survey (1=Yes)	RENAMU
Global Final Muni. Budget (per capita $)	Global final muni. budget, per capita (USD)	MEF
Results-Based Budgeting (RBB) Management Capacity		
Goal Match	Goals of Concerted Muni. Development Plan match Rural Development Plan (1=Yes)	RENAMU
Indicators	Indicators verify completion of goals of Concerted Muni Development Plan (1=Yes)	RENAMU
RBB Units	Muni. has units responsible of implementing goals of the Concerted Muni. Development Plan (1=Yes)	RENAMU
Mid-term Goals	Concerted Muni. Development Plan mid-term goals (1=Yes)	RENAMU
Plan-Budget Correspondence	Budget lines and the Concerted Muni. Development Plan correspond (1=Yes)	RENAMU
Statistics	Generates social, economic, and environmental statistics (of tasks within its responsibilities) (1=Yes)	RENAMU
Performance Indicators	Muni. has performance indicators of expenses (1=Yes)	RENAMU
Budget Transparency	Budget information is available to the population through website (1=Yes)	RENAMU
Donor Support	Budget reports include income/expenses of donor-financed projects (1=Yes)	RENAMU

Variable Name	Variable Description	Data Source[1]
HR Incentives	Payroll and personnel evaluation systems incentivize attainment of muni. results (1=Yes)	RENAMU
Service Delivery Quality	Muni. has strategies to improve quality of public service delivery (1=Yes)	RENAMU
Public Consultations	Muni. regularly uses public consultation to improve public services (1=Yes)	RENAMU
Public Service Coverage	Muni. has efficiency/effectiveness indicators to assess public service coverage (1=Yes)	RENAMU
Mayor Reelected	Mayor in 2014 remains in office in 2016 and 2018 (1=Yes)	JNE
Mayor's Vote Share	Vote share obtained by municipal election winner (%)	JNE
Local Party	Mayor's party is a local/regional political party (No=Natl Party or Alliance)	JNE
Mayor Female	Elected mayor is female (1=Yes)	JNE
Poverty	Poverty percent (2013)	INEI
Total Population	Total population estimations, district level (2018-2020)	INEI
Ecological Region	Ecological regions (coast compared to all other ecological regions, 2017)	INEI

[1] The data source acronyms correspond to the names in Spanish and represent the following (in order of appearance): RENAMU, National Registry of Municipalities of Peru; MEF, Ministry of Finance; SIGERSOL, Solid Waste Management Information System; INEI, National Statistics Institute of Peru, and; JNE, National Jury of Elections.

Table A6. Pairwise Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) WM Admin. Capacity Index	1.000														
(2) WM Budget (per Capita $)	0.051*	1.000													
(3) Waste Collection Vehicles (per sq. mile)	0.116*	0.041*	1.000												
(4) Waste Disposal Equipment (per 1,000 people)	0.034*	0.046*	0.011	1.000											
(5) Neighborhood Committee Participation Index	0.240*	0.015	0.062*	0.015	1.000										
(6) CSO Concentration	-0.251*	0.027	-0.096*	0.021	-0.117*	1.000									
(7) Collaborative Governance Index	0.036*	-0.010	0.016	0.008	0.074*	0.025	1.000								
(8) General Admin. Capacity Index	0.197*	0.027	-0.005	0.015	0.118*	-0.061*	0.093*	1.000							
(9) Mayor Reelected	0.043*	0.008	0.060*	-0.027	-0.034*	-0.049*	0.018	0.013	1.000						
(10) Mayor's Vote Share	-0.117*	0.040*	-0.023	-0.003	-0.085*	0.038*	-0.028*	-0.028*	0.187*	1.000					
(11) Local Party	-0.002	-0.013	-0.011	-0.017	0.012	0.075*	0.011	0.002	-0.032*	0.039*	1.000				
(12) Mayor Female	0.029*	0.023	0.002	0.001	0.002	0.000	0.010	0.006	0.034*	-0.026	-0.001	1.000			
(13) Poverty	-0.287*	-0.082*	-0.140*	-0.020	-0.202*	0.329*	0.014	-0.070*	-0.067*	0.039*	0.048*	-0.068*	1.000		
(14) Total Population	0.315*	0.028	0.115*	-0.031*	0.097*	-0.220*	0.029*	0.077*	0.063*	-0.033*	-0.099*	0.021	-0.255*	1.000	
(15) Ecological Region	0.001	-0.027	-0.098*	-0.008	-0.043*	0.023	0.009	0.061*	-0.033*	-0.030*	0.112*	0.001	0.185*	-0.156*	1.000

*** p<0.01, ** p<0.05, * p<0.1

References

Abarca-Guerrero, Lilliana, Ger Maas, and William Hogland. 2013. "Solid Waste Management Challenges for Cities in Developing Countries." *Waste Management* 33(1): 220-232.

Acemoglu, Daron and Melissa Dell. 2010. "Productivity Differences between and within Countries." *American Economic Journal: Macroeconomics* 2(1): 169-188.

Ackerman, Frank. 2000. "Waste Management and Climate Change." *Local Environment* 5(2): 223-229.

Agranoff, Robert. 2007. *Managing within Networks: Adding Value to Public Organizations*. Georgetown University Press.

Akinbile, Christopher O. and Mohd S. Yusoff. 2011. "Environmental Impact of Leachate Pollution on Groundwater Supplies in Akure, Nigeria." *International Journal of Environmental Science and Development* 2(1): 81.

Alam, Mozaharul and MD Golam Rabbani. 2009. "Vulnerabilities and Responses to Climate Change for Dhaka." In *Adapting Cities to Climate Change: Understanding and Addressing the Development Challenges*, eds. Jane Bicknell, David Dodman and David Satterthwaite. London: International Institute for Environment and Development.

Aleluia, Joao and Paulo Ferrão. 2017. "Assessing the Costs of Municipal Solid Waste Treatment Technologies in Developing Asian Countries." *Waste Management* 69: 592-608.

Aleluia, João and Paulo Ferrão. 2016. "Characterization of Urban Waste Management Practices in Developing Asian Countries: A New Analytical Framework Based on Waste Characteristics and Urban Dimension." *Waste Management* 58: 415-429.

Andrews, Rhys and George A. Boyne. 2010. "Capacity, Leadership, and Organizational Performance: Testing the Black Box Model of Public Management." *Public Administration Review* 70(3): 443-454.

Andrews, Rhys. 2010a. "Organizational Social Capital, Structure and Performance." *Human Relations* 63(5): 583-608.

_____. 2010b. "Organizational Structure and Public Service Performance." *Public management and performance: Research directions*: 89-109.

Anguelovski, Isabelle and JoAnn Carmin. 2011. "Something Borrowed, Everything New: Innovation and Institutionalization in Urban Climate Governance." *Current Opinion in Environmental Sustainability* 3(3): 169-175.

Anguelovski, Isabelle, Eric Chu, and JoAnn Carmin. 2014. "Variations in Approaches to Urban Climate Adaptation: Experiences and Experimentation from the Global South." *Global Environmental Change* 27: 156-167.

Ansell, Chris and Alison Gash. 2018. "Collaborative Platforms as a Governance Strategy." *Journal of Public Administration Research and Theory* 28(1): 16-32.

Auerbach, Adam Michael. 2017. "Neighborhood Associations and the Urban Poor: India's Slum Development Committees." *World Development* 96: 119-135.

_____. 2020. *Demanding Development: The Politics of Public Goods Provision in India's Urban Slums*. New York: Cambridge University Press.

Austin, James E. 2000. "Strategic Collaboration between Nonprofits and Businesses." *Nonprofit and Voluntary Sector Quarterly* 29(1_suppl): 69-97.

Avellaneda, Claudia N. 2009. "Municipal Performance: Does Mayoral Quality Matter?". *Journal of Public Administration Research and Theory* 19(2): 285-312.

_____. 2012. "Do Politics or Mayors' Demographics Matter for Municipal Revenue Expansion?". *Public Management Review* 14(8): 1061-1086.

Aylett, Alexander. 2015. "Institutionalizing the Urban Governance of Climate Change Adaptation: Results of an International Survey." *Urban Climate* 14: 4-16.

Babiak, Kathy and Lucie Thibault. 2009. "Challenges in Multiple Cross-Sector Partnerships." *Nonprofit and Voluntary Sector Quarterly* 38(1): 117-143.

Batley, Richard. 2006. "Engaged or Divorced? Cross-Service Findings on Government Relations with Non-State Service-Providers." *Public Administration and Development: The International Journal of Management Research and Practice* 26(3): 241-251.

Batley, Richard and Claire Mcloughlin. 2010. "Engagement with Non-State Service Providers in Fragile States: Reconciling State-Building and Service Delivery." *Development Policy Review* 28(2): 131-154.

Batley, Richard. 2011. "Structures and Strategies in Relationships between Non-Government Service Providers and Governments." *Public Administration and Development* 31(4): 306-319.

Batley, Richard and Claire Mcloughlin. 2015. "The Politics of Public Services: A Service Characteristics Approach." *World Development* 74: 275-285.

Beall, Jo. 2001. "Valuing Social Resources or Capitalizing on Them? Limits to Pro-Poor Urban Governance in Nine Cities of the South." *International Planning Studies* 6(4): 357-375.

Bello-Gómez, Ricardo A. 2020a. "Interacting Capacities: The Indirect National Contribution to Subnational Service Provision." *Public Administration Review*.

_____. 2020b. "Unpacking Administrative Decentralization: Testing the Interaction of National and Subnational Government Capacity in Explaining Subnational Performance." Doctoral Dissertation. Indiana University - Bloomington.

Bovaird, Tony. 2007. "Beyond Engagement and Participation: User and Community Coproduction of Public Services." *Public Administration Review* 67(5): 846-860.

Bovaird, Tony and Elke Loeffler. 2012. "From Engagement to Co-Production: The Contribution of Users and Communities to Outcomes and Public Value." *Voluntas: International Journal of Voluntary and Nonprofit Organizations* 23(4): 1119-1138.

Boyne, George A. 2003. "Sources of Public Service Improvement: A Critical Review and Research Agenda." *Journal of Public Administration Research and Theory* 13(3): 367-394.

Boyne, George A. and Richard M. Walker. 2005. "Introducing the "Determinants of Performance in Public Organizations" Symposium." *Journal of Public Administration Research and Theory* 15(4): 483-488.

Brandsen, Taco and Victor Pestoff. 2006. "Co-Production, the Third Sector and the Delivery of Public Services: An Introduction." *Public Management Review* 8(4): 493-501.

Brandsen, Taco and Marlies Honingh. 2016. "Distinguishing Different Types of Coproduction: A Conceptual Analysis Based on the Classical Definitions." *Public Administration Review* 76(3): 427-435.

Brass, Jennifer N. 2012. "Blurring Boundaries: The Integration of NGOs into Governance in Kenya." *Governance* 25(2): 209-235.

_____. 2016. *Allies or Adversaries: NGOs and the State in Africa*. New York: Cambridge University Press.

Brass, Jennifer N., Sanya Carley, Lauren M. MacLean, and Elizabeth Baldwin. 2012. "Power for Development: A Review of Distributed Generation Projects in the Developing World." *Annual Review of Environment and Resources* 37: 107-136.

Brinkerhoff, Derick W. and Jennifer M. Brinkerhoff. 2011. "Public–Private Partnerships: Perspectives on Purposes, Publicness, and Good Governance." *Public Administration and Development* 31(1): 2-14.

Brinkerhoff, Derick W. and Anna Wetterberg. 2016. "Gauging the Effects of Social Accountability on Services, Governance, and Citizen Empowerment." *Public Administration Review* 76(2): 274-286.

Brinkerhoff, Jennifer M. 2002. "Government–Nonprofit Partnership: A Defining Framework." *Public Administration and Development: The International Journal of Management Research and Practice* 22(1): 19-30.

Bryson, John M., Barbara C. Crosby, and Melissa M. Stone. 2006. "The Design and Implementation of Cross-Sector Collaborations: Propositions from the Literature." *Public Administration Review* 66(s1): 44-55.

_____. 2015. "Designing and Implementing Cross-Sector Collaborations: Needed and Challenging." *Public Administration Review* 75(5): 647-663.

Bulkeley, Harriet and Michele M. Betsill. 2013. "Revisiting the Urban Politics of Climate Change." *Environmental Politics* 22(1): 136-154.

Cameron, A. Colin and Douglas L. Miller. 2015. "A Practitioner's Guide to Cluster-Robust Inference." *Journal of Human Resources* 50(2): 317-372.

Cammett, Melani C. and Lauren M. MacLean. 2011. "Introduction: The Political Consequences of Non-State Social Welfare in the Global South." *Studies in Comparative International Development* 46(1): 1-21.

_____. 2014. "The Political Consequences of Non-State Social Welfare: An Analytical Framework." In *The Politics of Non-State Social Welfare*, eds. Melani C. Cammett and Lauren M. MacLean. Ithaca: Cornell University Press.

Carmin, JoAnn, Isabelle Anguelovski, and Debra Roberts. 2012. "Urban Climate Adaptation in the Global South: Planning in an Emerging Policy Domain." *Journal of Planning Education and Research* 32(1): 18-32.

Cheng, Yuan. 2019a. "Exploring the Role of Nonprofits in Public Service Provision: Moving from Coproduction to Cogovernance." *Public Administration Review* 79(2): 203-214.

_____. 2019b. "Governing Government-Nonprofit Partnerships: Linking Governance Mechanisms to Collaboration Stages." *Public Performance & Management Review* 42(1): 190-212.

Christensen, Robert K. and Beth Gazley. 2008. "Capacity for Public Administration: Analysis of Meaning and Measurement." *Public Administration and Development: The International Journal of Management Research and Practice* 28(4): 265-279.

Chu, Eric, Isabelle Anguelovski, and JoAnn Carmin. 2016. "Inclusive Approaches to Urban Climate Adaptation Planning and Implementation in the Global South." *Climate Policy* 16(3): 372-392.

Clayton, Andrew, Peter Oakley, and Jon Taylor. 2000. *Civil Society Organizations and Service Provision*. Geneva: United Nations Research Institute for Social Development, Civil Society and Social Movements Programme. Paper No. 2.

Coston, Jennifer M. 1998. "A Model and Typology of Government-NGO Relationships." *Nonprofit and Voluntary Sector Quarterly* 27(3): 358-382.

Denhardt, Janet V. and Robert B. Denhardt. 2015. "The New Public Service Revisited." *Public Administration Review* 75(5): 664-672.

Devas, Nick and Ursula Grant. 2003. "Local Government Decision-Making—Citizen Participation and Local Accountability: Some Evidence from Kenya and Uganda." *Public Administration and Development* 23(4): 307-316.

Douglas, Ian, Kurshid Alam, MaryAnne Maghenda, Yasmin McDonnell, Louise McLean, and Jack Campbell. 2009. "Unjust Waters: Climate Change, Flooding and the Urban Poor in Africa." In *Adapting Cities to Climate Change: Understanding and Addressing the Development Challenges*, eds. Jane Bicknell, David Dodman and David Satterthwaite. London: International Institute for Environment and Development.

Edwards, Michael and David Hulme. 1996. "Too Close for Comfort? The Impact of Official Aid on Nongovernmental Organizations." *World Development* 24(6): 961-973.

Emerson, Kirk, Tina Nabatchi, and Stephen Balogh. 2012. "An Integrative Framework for Collaborative Governance." *Journal of Public Administration Research and Theory* 22(1): 1-29.

Escobal, Javier and Maximo Torero. 2005. "Adverse Geography and Differences in Welfare in Peru." In *Spatial Inequality and Development*, eds. Ravi Kanbur and Anthony J. Venables. Oxford: Oxford University Press.

Fernandez, Sergio. 2004. "Developing and Testing an Integrative Framework of Public Sector Leadership: Evidence from the Public Education Arena." *Journal of Public Administration Research and Theory* 15(2): 197-217.

Fernandez, Sergio and Tima Moldogaziev. 2013. "Employee Empowerment, Employee Attitudes, and Performance: Testing a Causal Model." *Public Administration Review* 73(3): 490-506.

Fernando, Jude L. 2011. *The Political Economy of NGOs: State Formation in Sri Lanka and Bangladesh*. London: Pluto Press.

Fobil, Julius N., Nathaniel A. Armah, Jonathan N. Hogarh, and Derick Carboo. 2008. "The Influence of Institutions and Organizations on Urban Waste Collection Systems: An Analysis of Waste Collection System in Accra, Ghana (1985–2000)." *Journal of Environmental Management* 86(1): 262-271.

Fredericks, Rosalind. 2009. "Wearing the Pants: The Gendered Politics of Trashwork in Senegal's Capital City." *Hagar Studies in Culture, Polity and Identities* 9(1): 119-146.

Galbraith, Jay R. 2002. *Designing Organizations: An Executive Guide to Strategy, Structure, and Processes*. San Francisco, CA: Jossey-Bass.

Gore, Christopher and Pamela Robinson. 2009. "Local Government Response to Climate Change: Our Last, Best Hope." In *Changing Climates in North American Politics: Institutions, Policymaking, and Multilevel Governance*, ed. Henrik Selin and Stacy D. VanDeveer. Cambridge: MIT Press.

Grillos, Tara. 2017. "Participatory Budgeting and the Poor: Tracing Bias in a Multi-Staged Process in Solo, Indonesia." *World Development* 96: 343-358.

Grindle, Merilee S. 2007. *Going Local: Decentralization, Democratization, and the Promise of Good Governance*. Princeton University Press.

Hannan, Michael T. and John Freeman. 1984. "Structural Inertia and Organizational Change." *American Sociological Review* 49(2): 149-164.

Hawkins, Christopher V., Rachel M. Krause, Richard C. Feiock, and Cali Curley. 2016. "Making Meaningful Commitments: Accounting for Variation in Cities' Investments of Staff and Fiscal Resources to Sustainability." *Urban Studies* 53(9): 1902-1924.

Hoornweg, Daniel and Perinaz Bhada-Tata. 2012. *What a Waste: A Global Review of Solid Waste Management*. Urban Development Series. Washington, DC: World Bank.

Ingraham, Patricia W., Philip G. Joyce, and Amy K. Donahue. 2003. *Government Performance: Why Management Matters*. Taylor & Francis.

Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Edited by Susan Solomon, Dahe Qin, Martin Manning, Zhenlin Chen, Melinda Marquis, Kristen Averyt, Melinda M.B. Tignor, Henry L. Miller. Cambridge: Cambridge University Press.

_____. 2015. *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Edited by Core Writing Team, Rajendra K. Pachauri and Leo Meyer. Geneva: IPCC.

Jaramillo, Miguel and Lorena Alcázar. 2013. "Does Participatory Budgeting Have an Effect on the Quality of Public Services? The Case of Peru's Water and Sanitation Sector." Washington, DC: IDB Working Paper Series. Working Paper 386.

Jaramillo, Miguel and Glenn D. Wright. 2015. "Participatory Democracy and Effective Policy: Is There a Link? Evidence from Rural Peru." *World Development* 66: 280-292.

Jaramillo, Miguel and Lorena Alcázar. 2017. "Does Participatory Budgeting Have an Effect on the Quality of Public Services? The Case of Peru's Water and Sanitation Sector." In *Improving Access and Quality of Public Services in Latin America: To Govern and to Serve*, eds. Guillermo Perry and Ramona Angelescu Naqvi. New York: Palgrave Macmillan.

Jeswani, Harish K. and Adisa Azapagic. 2016. "Assessing the Environmental Sustainability of Energy Recovery from Municipal Solid Waste in the Uk." *Waste Management* 50: 346-363.

Kaza, Silpa, Lisa Yao, Perinaz Bhada-Tata, and Frank Van Woerden. 2018. *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*. Urban Development Series. Washington, DC: World Bank.

Kjeldsen, Peter, Morton A. Barlaz, Alix P. Rooker, Anders Baun, Anna Ledin, and Thomas H. Christensen. 2002. "Present and Long-Term Composition of Msw Landfill Leachate: A Review." *Critical reviews in environmental science and technology* 32(4): 297-336.

Krause, George A., David E. Lewis, and James W. Douglas. 2006. "Political Appointments, Civil Service Systems, and Bureaucratic Competence: Organizational Balancing and Executive Branch Revenue Forecasts in the American States." *American Journal of Political Science* 50(3): 770-787.

Krause, Rachel M., Richard C. Feiock, and Christopher V. Hawkins. 2016. "The Administrative Organization of Sustainability within Local Government." *Journal of Public Administration Research and Theory* 26(1): 113-127.

Krause, Rachel M., Angela Y. S. Park, Christopher V. Hawkins, and Richard C. Feiock. 2019. "The Effect of Administrative Form and Stability on Cities' Use of Greenhouse Gas Emissions Inventories as a Basis for Mitigation." *Journal of Environmental Policy & Planning* 21(6): 826-840.

Kruks-Wisner, Gabrielle. 2018. *Claiming the State: Active Citizenship and Social Welfare in Rural India*. Cambridge University Press.

Lawrence, Paul R. and Jay W. Lorsch. 1967. "Differentiation and Integration in Complex Organizations." *Administrative science quarterly* 12(1): 1-47.

Loeffler, Elke and Tony Bovaird. 2016. "User and Community Co-Production of Public Services: What Does the Evidence Tell Us?". *International Journal of Public Administration* 39(13): 1006-1019.

Lohri, Christian Riuji, Ephraim Joseph Camenzind, and Christian Zurbrügg. 2014. "Financial Sustainability in Municipal Solid Waste Management–Costs and Revenues in Bahir Dar, Ethiopia." *Waste Management* 34(2): 542-552.

McGuire, Michael. 2006. "Collaborative Public Management: Assessing What We Know and How We Know It." *Public Administration Review* 66(s1): 33-43.

Mcloughlin, Claire. 2011. "Factors Affecting State–Non-Governmental Organisation Relations in Service Provision: Key Themes from the Literature." *Public Administration and Development* 31(4): 240-251.

McNulty, Stephanie. 2011. *Voice and Vote: Decentralization and Participation in Post-Fujimori Peru*. Stanford University Press.

_____. 2013. "Participatory Democracy? Exploring Peru's Efforts to Engage Civil Society in Local Governance." *Latin American Politics and Society* 55(3): 69-92.

_____. 2019. *Democracy from Above?: The Unfulfilled Promise of Nationally Mandated Participatory Reforms*. Stanford University Press.

Meier, Kenneth J. and Laurence J. O'Toole Jr. 2002. "Public Management and Organizational Performance: The Effect of Managerial Quality." *Journal of Policy Analysis and Management: The Journal of the Association for Public Policy Analysis and Management* 21(4): 629-643.

Ministry of Environment of Peru (MINAM). 2016. *National Plan of Integral Solid Waste Management: 2016-2024*. Lima: MINAM. Accessed through: https://sinia.minam.gob.pe/documentos/plan-nacional-gestion-integral-residuos-solidos-2016-2024.

Mintzberg, Henry. 1983. *Structures in Fives: Designing Effective Organizations*. Englewood Cliffs, NJ: Prentice-Hall.

Nabatchi, Tina, Trui Steen, Mariafrancesca Sicilia, and Dirk Brand. 2016. "Understanding the Diversity of Coproduction: Introduction to the Ijpa Special Issue." *International Journal of Public Administration* 39(13): 1001-1005.

Nabatchi, Tina, Alessandro Sancino, and Mariafrancesca Sicilia. 2017. "Varieties of Participation in Public Services: The Who, When, and What of Coproduction." *Public Administration Review* 77(5): 766-776.

National Statistics Institute of Peru (INEI). 2015. *Environmental Statistics Annual Report*. Lima: INEI. Accessed through: https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1342/libro.pdf.

_____. 2016. *Environmental Statistics Annual Report*. Lima: INEI. Accessed through: https://sinia.minam.gob.pe/documentos/anuario-estadisticas-ambientales-2016.

_____. 2019. *Environmental Statistics Annual Report*. Lima: INEI. Accessed through: https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1704/libro.pdf.

Nelson-Nuñez, Jami. 2019. "Substitution or Facilitation: Service-Delivery NGOs and Political Engagement in the Peruvian Amazon." *Comparative Political Studies* 52(3): 445-477.

Nicholson-Crotty, Sean and Laurence J. O'Toole Jr. 2004. "Public Management and Organizational Performance: The Case of Law Enforcement Agencies." *Journal of Public Administration Research and Theory* 14(1): 1-18.

O'Meally, Simon C. 2013. "Mapping Context for Social Accountability: A Resource Paper." Washington, DC: World Bank, Social Development Department.

O'Toole Jr., Laurence J. and Kenneth J. Meier. 1999. "Modeling the Impact of Public Management: Implications of Structural Context." *Journal of Public Administration Research and Theory* 9(4): 505-526.

_____. 2003. "Plus Ça Change: Public Management, Personnel Stability, and Organizational Performance." *Journal of Public Administration Research and Theory* 13(1): 43-64.

Olvera, Johabed G. and Claudia N. Avellaneda. 2019. "Subnational Government Performance: Testing Multiple Dimensions of Governors' Experience." *Public Administration Review* 79(3): 383-398.

Osborne, Stephen P. and Kate McLaughlin. 2004. "The Cross-Cutting Review of the Voluntary Sector: Where Next for Local Government–Voluntary Sector Relationships?". *Regional studies* 38(5): 571-580.

Osborne, Stephen P., Zoe Radnor, and Greta Nasi. 2013. "A New Theory for Public Service Management? Toward a (Public) Service-Dominant Approach." *The American Review of Public Administration* 43(2): 135-158.

Ostrom, Elinor. 1996. "Crossing the Great Divide: Coproduction, Synergy, and Development." *World Development* 24(6): 1073-1087.

_____. 2009. *A Polycentric Approach for Coping with Climate Change*. Washington, DC: World Bank Policy Research. Working Paper 5095.

Page, Stephen B, Melissa M Stone, John M Bryson, and Barbara C Crosby. 2015. "Public Value Creation by Cross-Sector Collaborations: A Framework and Challenges of Assessment." *Public Administration* 93(3): 715-732.

Pfeffer, Jeffrey and Gerald R. Salancik. 2003. *The External Control of Organizations: A Resource Dependence Perspective*. Stanford, CA: Stanford University Press.

Pfeiffer, James. 2003. "International NGOs and Primary Health Care in Mozambique: The Need for a New Model of Collaboration." *Social Science & Medicine* 56(4): 725-738.

Post, Alison E. 2018. "Cities and Politics in the Developing World." *Annual Review of Political Science* 21: 115-133.

Post, Alison E., Vivian Bronsoler, and Lana Salman. 2017. "Hybrid Regimes for Local Public Goods Provision: A Framework for Analysis." *Perspectives on Politics* 15(4): 952-966.

Putnam, Robert D., Robert Leonardi, and Raffaella Y. Nanetti. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton: Princeton University Press.

Rainey, Hal G. and Paula Steinbauer. 1999. "Galloping Elephants: Developing Elements of a Theory of Effective Government Organizations." *Journal of Public Administration Research and Theory* 9(1): 1-32.

Rajkumar, Andrew Sunil and Vinaya Swaroop. 2008. "Public Spending and Outcomes: Does Governance Matter?". *Journal of Development Economics* 86(1): 96-111.

Remy, María Isabel. 2004. *Los Múltiples Campos De La Participación Ciudadana En El Perú: Un Reconocimiento Del Terreno Y Algunas Reflexiones*, Vol. 23. Instituto de Estudios Peruanos.

Robinson, Mark and Gordon White. 1997. *The Role of Civic Organizations in the Provision of Social Services: Towards Synergy*. Helsinki: UNU-World Institute for Development Economics Research. Research for Action 37.

Satterthwaite, David, Saleemul Huq, Hannah Reid, Mark Pelling, and Patricia Romero Lankao. 2009. "Adapting to Climate Change in Urban Areas: The Possibilities and Constraints in Low- and Middle-Income Nations." In *Adapting Cities to Climate Change: Understanding and Addressing the Development Challenges*, eds. Jane Bicknell, David Dodman and David Satterthwaite. London: International Institute for Environment and Development.

Schreurs, Miranda A. 2008. "From the Bottom Up: Local and Subnational Climate Change Politics." *The Journal of Environment & Development* 17(4): 343-355.

Schübeler, Peter, Jürg Christen, and Karl Wehrle. 1996. *Conceptual Framework for Municipal Solid Waste Management in Low-Income Countries*. St. Gallen: Swiss Centre for Development Cooperation in Technology and Management. Working Paper 9.

Selsky, John W. and Barbara Parker. 2005. "Cross-Sector Partnerships to Address Social Issues: Challenges to Theory and Practice." *Journal of Management* 31(6): 849-873.

Sheely, Ryan. 2015. "Mobilization, Participatory Planning Institutions, and Elite Capture: Evidence from a Field Experiment in Rural Kenya." *World Development* 67: 251-266.

Shekdar, Ashok V. 2009. "Sustainable Solid Waste Management: An Integrated Approach for Asian Countries." *Waste Management* 29(4): 1438-1448.

Thompson, James D. 1967. *Organizations in Action: Social Science Bases of Administrative Theory*. New Brunswick: Transaction publishers.

Thomson, Ann Marie and James L Perry. 2006. "Collaboration Processes: Inside the Black Box." *Public Administration Review* 66: 20-32.

Torpey-Saboe, Nichole. 2015. "Does NGO Presence Decrease Government Spending? A Look at Municipal Spending on Social Services in Brazil." *World Development* 74: 479-488.

United Nations Environmental Programme (UNEP). 2010. *Waste and Climate Change: Global Trends and Strategy Framework*. Osaka: International Environmental Technology Center.

United Nations Human Settlements Programme (UN-Habitat). 2010. *Solid Waste Management in the World's Cities: Water and Sanitation in the World's Cities 2010*. Washington, DC: UN-Habitat.

United States Agency for International Development (USAID). 2018. *Sector Environmental Guideline: Solid Waste*. Washington, DC: USAID. Accessed through:

https://www.usaid.gov/sites/default/files/documents/1860/SectorEnvironmentalGuidelines_SolidWaste_2018.pdf

Vidanaarachchi, Chandana K, Samuel TS Yuen, and Sumith Pilapitiya. 2006. "Municipal Solid Waste Management in the Southern Province of Sri Lanka: Problems, Issues and Challenges." *Waste Management* 26(8): 920-930.

Whaites, Alan. 1998. "NGOs, Civil Society and the State: Avoiding Theoretical Extremes in Real World Issues." *Development in Practice* 8(3): 343-349.

Wood, Geoffrey D. 1997. "States without Citizens: The Problem of the Franchise State." In *NGOs, States and Donors: Too Close for Comfort*, eds. David Hulme and Michael Edwards. London: Macmillan.

World Bank. 2003. *World Development Report 2004: Making Services Work for Poor People*. Washington, DC: World Bank and Oxford University Press.

_____. 2005. *World Development Report 2006: Equity and Development*. Washington, DC: World Bank.

_____. 2008. "World Development Report 2009: Reshaping Economic Geography." Washington, DC: The World Bank.

Zambrano-Gutiérrez, Julio César, Amanda Rutherford, and Sean Nicholson-Crotty. 2017. "Types of Coproduction and Differential Effects on Organizational Performance: Evidence from the New York City School System." *Public Administration* 95(3): 776-790.