The Challenge to Delivery of Public Goods in Rapidly Expanding Cities in Africa: Financing and Implementing Water and Sanitation Policies in Lagos, Nigeria.

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Introduction

Basic services such as water supply, sanitation, sewerage or waste management, considered high-risk and low-revenue by private investors, are sectors with some of the most critical gaps in meeting basic needs (Alam 2010). The history of the water sector, in particular, has been driven by supply-side solutions, without regard for consumer preference, practice or affordability (in case or in time), and this problem becomes acute for the urban and peri-urban poor, who are often disregarded by the public governance structure and whose living spaces are regarded as temporary or illegitimate and subject to slum clearance.

The literature on cost recovery, governance reform and supply-side solutions to problems with water provision and other collective goods has not fully dealt with the now well-documented existence of parallel private markets for services such as water, sanitation, health and transportation in less developed countries (Moran and Batley 2004; Budds and McGranahan 2003). Often, the city as a whole or significant parts of it (e.g. so-called slum settlements) are treated like a black box and variation in supply, access and demand behavior throughout the city is not tested empirically or accounted for in reform proposals. Whittington, Lauria and Mu (1991) point out in their study of willingness to pay for water in Onitsha, Nigeria, the lack of knowledge about household water demand behavior (how much water, what is it used for, where is it sourced from, and what is paid for it) has not historically interfered with planning and investment in the sector (179).

Consideration of quality is the other side of the coin in understanding the demand for public services. Although the implementation of cost recovery measures may be economically

efficient, the quality of municipal services must be as good as or greater than what they could obtain from private vendors (Fox and Edmiston 2000). According to Fox and Edmiston (2000), enhancements to the quality of public services should be in line with demand and willingness to pay. The authors cite a study showing that public managers in developing countries are influenced by examples from industrialized countries and often set standards higher than local demands, which in turn dramatically increased costs (and subsequently the user charges needed to recoup cost).

Reliability, water pressure, pollution, color, taste and potability are among the list of quality considerations with respect to water supply. In a study of willingness to pay by Whittington, Okorafor, Okore and McPhail (1990) of a rural district in Anambra state Nigeria, quality of water services along these dimensions was found to be lacking and was the reason that residents did not want to commit to paying for water in advance or a fixed monthly fee. Although vended water was higher priced it was preferred over public taps due to the perception of the quality of government-provided services, and the ability to control their cash flow by purchasing only the amount of water desired when it was needed (enabling cash to be used for other purposes when necessary). Rather than improve the public water supply, residents exited from it completely. There is also a completely different problem facing households that may be willing but unable to pay or that are socially excluded or live in areas that are not prioritized in policymaking and planning. Even when there is demand for improved sanitation and water supply services, often the institutional means to express this demand are lacking, given income, the perceived benefits to improved water or sanitation, lack of trust in local authorities, and land tenure (Manase, Mulenga and Fawcett 2001, p. 3).

The goals of this paper are two-fold. First, this paper critically assesses the decentralized nature of water and sanitation provision in the context of rapid urban population growth and the resulting implications on the ability of local governments comprising the Lagos metropolitan area in Nigeria and Addis Ababa, Ethiopia to meet the basic needs of all citizens. Secondly, paper compares the experiences of each city, to identify similarities and points of departure, and implications for understanding the challenges in the water sector across a broad variety of settings.

Data for this study comes from a mix of primary survey and interview data, along with government and NGO reports and secondary information derived from published articles. Because much of the actual delivery of water and sanitation, especially informal delivery to the poor, is invisible (not regulated or monitored by official data gathering), mixed sources and first hand empirical data collection and observation are critical in beginning to understand the full picture and nature of the challenges to effective service for all.

The discussion that follows is divided into three sections and a conclusion. Part Two features a discussion of the evolution of Lagos' water history and the constant tension between areas given priority for planning and development verses neglected parts of the city. Part Three deals with city government's role in the delivery of water and sanitation services, and the impact on the provision of such services. With respect to Lagos, this section will talk about the split responsibilities between the state and local governments to provide water. Part Four deals with the current urban water sector reform underway in Lagos. Part Five draws conclusions about the case study, focusing attention on problems of implementing this strategy, financing and the implications given the context in which governance must operate.

Lagos Context

Although there is a common colonial history in Nigeria, it took root differently in various parts of the country given the long legacy prior to colonial arrival, which also affected the interaction between citizens and the state around the supply and demand of basic services like water. The area around the southwestern edge of Lagos Lagoon has had a continuous existence for at least 530 years, long before Nigeria's entrance into the world stage of independent nations, free from 100 years of British rule. For Lagos, the transition to British colonial rule in 1861 established a new property rights regime that resulted in the social and spatial displacement of the indigenous Yoruba elite and majority. From swamp reclamation that created government residential estates to the city's first waterworks at Iju in 1914, colonial planning in Lagos reflected beliefs prevalent among Europeans in West Africa at the time. Racial attitudes about superiority that emerged out of centuries of the Trans-Atlantic slave trade became entangled with new developments in European public health and sanitation planning towards the end of the eighteenth century.

Such attitudes reinforced the notion that European standards of living were superior to those of indigenous Africans (Olukoju 2003b; Boahen 1986; Williams 1944; Cole 1975a; Olukoju 2004). Among Africa's colonizers, the British sought to "modernize" African culture and institutions, leading to a divide between modern and traditional ways of life reinforced by planning decisions (Boahen 1986; Gandy 2006). Historian and former Nigerian Ambassador to Brazil, Patrick Dele Cole depicts the history of Lagos in the 19th century as the nexus of European officials, the traditional and educated elites, and the indigenous population (referred

to by Cole as the *indigene*) comprised of a plurality of African religious-ethnic communities that include Yoruba, Muslim, Animist and Christian peoples. He describes how the traditional elite "formed the buffer between the British administration and the indigene" (27).

Physical control was sought through the practice of residential segregation between Africans and Europeans based upon the emerging science of sanitation and colonial town planning (Gale 1979; Olukoju 2003b). Although Nigerian colonial law allowed the practice of segregation through the establishment of European reservation areas, the policy was adopted on an ad hoc basis throughout the territory depending on local circumstances and the perspective of the particular ruling official (Olukoju 2003b). Per colonial land use practices, different types of people settled in different residential areas. The Ikoyi area of Lagos Island was designated as an exclusive residential area for Europeans, using discriminatory leases. Health concerns remained the justification for segregation (Olukoju 2003b: 275). The desire for modern sanitation along with class and ethnic divisions also meant separate residential areas among African residents. The Saros, Brazilians, British, and particularly the indigenous population, lived separately and maintained separate cultural practices (Peil 1991: 22).

From various accounts, Lagos had the trappings of the "modern metropolis" by 1900, developing economically with its railways lugging goods from and to the rest of the nation via the Lagos Harbor. Schools, roads, bridges, hospitals and housing were continuously built to meet the demands of the ever-growing population. At the same period, the plans for the city's first piped water supply were being formed. The European settlers originally used wells to draw potable water, but the question of establishing an official water supply scheme for Lagos first arose in 1892.

The myopic elitism of colonial era planning concentrated infrastructure in non-African neighborhoods where British colonial officials and Europeans involved in the commercial sector lived. Wells were not abandoned in Nigeria after the introduction of piped water supply. From the outset, even if pipes had been extended to every household, the waterworks at full capacity could only serve half the population. Given the inadequacy of the piped system, women, traditionally responsible for gathering water, continued to take on these chores during Nigeria's development. Despite British efforts to compel public water use, the proliferation of hand wells continued (Olukoju 2003a)[1].

Outside of government residential estates, Lagos was relatively unplanned. As a result, bubonic plague and influenza epidemics swept the majority of the city between 1924 and 1930, where overcrowded housing with no sanitation and polluted water supplies were the norm. Although proposals were developed to expand sanitation and sewerage in the 1930s, these were hampered by the lack of funds. Lagos's first planning authority, the Lagos Executive Development Board (LEDB) emerged in 1928 out of this health crisis; its goal was to house expatriate and African government, commercial and police workers by creating special well-served "Government Residential Areas" (GRAs), creating a landscape of privileged districts surrounded by unplanned, and largely indigenous areas that lacked basic services (Cairncross, Hardoy and Satterthwaite 1990).

Urbanization, Displacement, Governance

[1] To compare the use of wells as opposed to the public water supply, in 1921 there were 200 fountains throughout the entire city and 2,679 wells, see Olukoju 2003a.

Between 1990 and 2004, Nigeria's urban population jumped to nearly half the national population, while access to improved sources of water in urban areas dropped by nearly 15 per cent during the same period, as measured by the WHO/UNICEF Joint Monitoring Programme (JMP). During the ten years from 2000 to 2010, the country's urban population will have grown by another 25 million people (UN 2007). Among the six regional divisions in the country, the South West (which includes Lagos) face large challenges in meeting household water needs. According to the 2003 Nigeria Demographic and Health Survey, people who live in the South-South region face the longest distances to their primary source, with less than half (45.8 per cent) of the population living within 15 minutes of their primary water supply. The region is among those with the lowest percentage of residents with water piped into their residential plots (NPC and ORC Macro 2004).

Eighty-five percent of the population of Lagos state resides within the metropolitan area, with only half able to access the piped water infrastructure. Although in 2003 the state passed a law that mandated the Lagos State Water Corporation supply potable water to the entire population, public water supply at the time only met 40% of demand (Lagos Water Corporation 2003).

There are persistent problems with power supply, aged infrastructure, and insufficient capacity in the main treatment works throughout the state. These problems are compounded by under-investment in repairing the existing network and extending the main trunk lines into new settlements as the city has expanded, which has led to illegal tapping in some areas, all of

which affect pressure and reliability to those who do have formal piped household connections. This means that nearly everyone in Lagos uses multiple sources to meet their daily water needs.

From the 1940s, the city continued to grow dramatically against the backdrop of an under-funded water supply system and resettlement schemes that privileged those connected with the government and commercial sectors and displaced the original inhabitants of Lagos. Rising speculative land prices made even property taxes unaffordable, compelling the indigenous poor to sell their land to the middle-class and move to far-flung areas least served with basic infrastructure (Peil 1991). There was some expansion of piped water supply for Lagos in 1943 but not for the surrounding communities.

The colonial history of services to the suburbs that would later become part of the Lagos metropolis is one of neglect. Areas such as Mushin and Ajegunle, which began as small Awori villages, were ignored by the colonial government until the 1920s when migrants began to move in and bid up land prices, causing local associations to form and build ties with the Lagos government to obtain more recognition (Peil 1991: 21). Peil notes that in Ajegunle, "[a]n attempt to introduce building regulations in 1940 pushed most residents of the area across what became Boundary road" (21). These areas came under different administrations over time, eventually falling under the Western Region in 1951, where they were ignored again since the regional government, administered from Ibadan, saw no point in providing for the Lagos suburbs (Peil 1991: 21).

By 1955, five years before independence, areas just outside of Lagos municipality on the mainland, such as Ajegunle, still had not received water. The cost of extending water the 4,500

feet that separated the municipality from the pipe was 1,200 British pounds. Cost recovery in the form of water stations to sell water at cost (capital and maintenance) was proposed as a solution if the colony could not extend the pipe (NAI 1955). As in the colonial era, most massive water investments in the postcolonial period went towards enhancing the capacity of the existing network and not towards the expansion of the piped network. As industry developed, people arrived from all parts of Nigeria, including Hausa from the predominantly Muslim north, Igbo from the east, and migrants from other countries.

This influx of different groups into Lagos left the indigenous population increasingly marginalized under colonial rule. In 1946 and 1950, the British tried to address rapid urbanization and calls for greater local control through the Town and Country Planning Act and an all-African Town Council. This was the first fully elected Town Council, with Dr. I. Olorun-Nimbe, a Muslim from Lagos, elected Mayor. Improving sanitation was one of the new council's projects, along with housing, transportation, and education. For example, the Lagos Local Government Ordinance in 1950 required the Town Council to maintain public latrines and manage waste disposal (Tijani 2004).

That piped water was not a priority illustrates the increasingly minimal role the indigenous population (about 33 percent at the dawn of the 20th century) had in colonial administration. The conflict between indigenous Yoruba, other non-Awori Yoruba and non-Yoruba immigrants is illustrated in the fact that, of the 24 members of the first elected Town Council in 1950, only five were indigenous (Peil 1991; Arowawo 2004). As Lagos merged with the rest of the country to become part of the Western Region in the Constitution of 1951, indigenous participation in the administration became even more tenuous (Aworawo 2004:

282). Colonial officials were well aware of the political agitation created by official segregation policy, particularly in the nationalist press. Within European residential areas, however, European-only churches and social clubs were the norm, as were African-only churches and social clubs outside of these areas. Over time, official terms for these residences changed from "European Segregation Areas" to "European Reservations" to "European Residential Areas" to "Government Residential Areas". "Native Reservations" became "Non-European Reservations" and later were not labeled at all (Olukoju 2003b: 275, 284).

In the end, growing nationalism—displayed in organizing activities and press agitation against discrimination—and advances in tropical medicine ended the official policy of segregation (Olukoju 2003b: 281-2). While overt racial restrictions in leases were eliminated in 1947, the official policy of segregation was not abandoned until April 1949, by which time power began to be handed to African nationalists. However, restrictions in the Government Residential Areas remained in place, although instead of race, they were based on "standards of living." In Ikoyi, for instance, leases were adopted specifying the maximum number that could inhabit residences (Olukoju 2003b: 283). In this way, previous symbols of racial segregation became "symbols of social status among the new [postcolonial] African elite" (Olukoju 2003b: 284).

Indeed, this concern for "standards of living" motivated the LEDB to use slum clearance, resettlement, and swamp reclamation programs to clear out indigenous African parts of the

city[2]. Slum clearance proceeded with a vengeance in central Lagos when the 1955 Slum Clearance Scheme opened up Apapa, Victoria Island and created the Surulere temporary housing scheme (which became permanent as land in central Lagos was turned over to commercial interests instead of being rehabilitated for the original residents)[3].

Throughout the colonial period, European officials in the medical service s recognized the need to improve the urban environment and housing to control disease, but the slum clearance solutions razed indigenous areas while giving little or no provisions for the newly homeless. Moreover, if concern for public health inspired slum clearance, then the project certainly failed; in 1967, an evaluation of the central part of Lagos revealed the persistence of congestion without sanitation, leaving the population susceptible to epidemics (Aina 1990, 58). The colonial history of Lagos also reveals how forms of African resistance to colonial rule affected the spatial logic of the city, which confounds easy measurements of distributional inequity. For example, although the Lagos Executive Development Board took over housing administration in Lagos from 1955, it had only built 4,500 houses by 1972 despite population growth to 3 million by that time. Outrage over the destruction of indigenous areas to create privileged areas for civil servants, such as the government's decision to destroy Isale Eko, the original and oldest part of Lagos Island, galvanized indigenous cultural nationalism and was instrumental in the resistance movements that spurred the formation of Lagos State in 1967 (Aworawo 2004, 287; Peil 1991, 50-51).

[2] For instance, they designated an area on the mainland, Ebute Metta, as a resettlement area for indigenous Yoruba on Lagos Island.

[3] People were also moved to Maroko in 1958, to make way for low density housing for Europeans and wealthier Africans on Victoria Island and Ikoyi (Peil 1991, p. 165; Kehinde 1999).

In response to a state that since the colonial period has been, at various times, predatory, self-serving, and aloof to the needs of its citizens, how could one characterize the response of Nigerians? Scholars have written about how, in the face of limited development, African households and communities have managed to sustain themselves to varying degrees through a resilient and complicated system of loyalty and kinship that serves as a social safety net (Ukiwo 2005, Ake 2000, Barkan, Mcnulty, Ekeh 1972, 1975). The transformation of Nigeria from a rural to a predominantly urban nation has impacted these informal systems, as large population concentrations require networked infrastructure to support development and continued population growth. As Nigeria has begun to transform itself in to an urban nation, and diverse groups of people have come to live together in cities, what institutions are in place to meet those same needs?

Provision of Public Goods and Limits of Governance in Basic Services and Water Delivery

Nigeria is a federal republic comprised of 36 states and the Federal Capital Territory of Abuja, the seat of national government. Each state is further divided into local government areas. The urban area of Lagos, Lagos Metropolitan Area is defined to include 16 out of the 20 local government areas. (This reflects the rapid expansion of the contiguous residential and economic area that has pushed the boundaries of Lagos metropolitan all the way to the border of Oyo State to the North. In 2003, under former Lagos Governor Tinubu, another 37 Local Council Development Areas were formed, making a total of 57 local governments. Lagos State

had petitioned for these additional council areas to become independent local governments, each entitled to separate monthly allocations. This would have increased the federal budget allocation to Lagos State, arguably needed to meet the needs of its rapidly growing population. However, former President Obasanjo disputed the subdivision of the existing local governments and withheld monthly allocations for local governments to Lagos state for more than two years after the Supreme Court declared the withholding unconstitutional. Today, there remain 20 official local governments from the federal government's perspective. However, Lagos state has proceeded to operate with 57 local governments, naming chairman and staff to each and carrying out planning activities under the new system.

Since the creation of Iju waterworks in 1914 under the British colonial administration, water supply in Lagos has been a constant game of catch up, with priority always for industry and residential areas connected with government or industry, especially when Lagos was the national capital and water supply fell under the responsibility of the federal territory. Today, there are 23 water treatment works in Lagos State (3 main waterworks, Iju, Adiyan and Ishasi, which have the capacity to supply 119 million gallons (541 million liters) per day to those areas of the state connected to the mains). Despite installed capacity, average production per day for all of the treatment works is about 69 million gallons per day or 312 million liters. The remainder of the water system is provided by a series of 12 Mini (2-3 million gallons per day capacity) and 8 micro waterworks (1 million gallons per day capacity) scattered throughout the metropolitan area. While the main waterworks intake surface water from the Ogun and Owo rivers, each mini and micro water works uses groundwater. Unaccounted for water is significant, particularly among the mini and micro waterworks. The worst problems are at Idimu

(50% water loss) and Otta Ikosi (33%). The remaining water works have an average water loss of 15%. Of the main treatment works, Ishasi (also the smallest) loses the most water (12.7%) followed by Adiyan (8.5%).

Unaccounted for water can be attributed to infrastructure problems in the distribution system – broken pipes and illegal connections. However, all of the water works (and especially the mini and micro waterworks) have had water quality problems due to electricity outages, damaged pipes, and illegal pipe tapping, Water quality is further compromised by the swampy topography, which causes subsidence and contamination of groundwater. Industrial waste dumping near industrial estates and into the lagoon is also a persistent water quality problem in the metropolitan area.

Reflecting the legacy of colonial planning, spatial injustice in the city is evident in how water supply in underserved parts of Lagos is provided today — informal water vendors, tanker trunks, private household water sales, illegal taps by residents near the water mains, or the use of unprotected surface and groundwater sources all have high economic and social costs. Currently, less than half of the city lives within reach of the piped infrastructure, and only two percent of households have connections to the piped water supply (Stoveland Consult 2000). Although the government has expanded the water supply infrastructure (albeit neglecting to deal with water borne sewerage), the legacy of colonial suspicions about water quality and frequent water shortages (exacerbated by energy deficiencies, population growth, illegal taps and poor maintenance) fuels the perception that the government is not for the people (Abiodun 1997). The poorest households draw water from multiple, more expensive alternatives that include vendors, open wells, and—in the worst cases—water that runs

through gutters. Some characterize Lagos as a "self-service city [where] little is expected from the municipal government" (Gandy 2006, 383). This lack of expectation, embodied in the opinion of the majority of Lagos residents that the government operates somewhere "out there…with its own agenda," can be traced to the colonial era, according to Ayodeji Olukoju[4] (Olukoju 2005).

Over 30 years ago, Barnes (1975) found that voluntary associations played a critical role in meeting the functional needs of communities in Lagos. Such organizations are just as important today. Osaghae describes collective exit behavior in Nigeria as a matter of survival, citing the dramatic upsurge in parallel, self-governing, black market, and self-help groups that arose in the 1980s and 1990s to perform "shadow state activities" including potable water provision and other basic services (1999, 84). In fact, some assert that Lagos may present the extreme of exit behavior in the face of declining public services. In a 2006 article on the history of planning and infrastructure development in the city, Lagos is described as a self-service city where citizens readily solve their own problems when it comes to accessing basic services, rather than investing significant energy in protest (Gandy 2006). Abiodun (1997) documents this activity in the water and sanitation sector.

Faced with limitations in water supply and sanitation services, increasing numbers of impoverished urban residents are forced to provide these amenities for themselves. A key problem is that this often occurs in ways that have both public health and environmental impacts, such as the spread of contaminants from hand-dug wells in Lagos that also affect the piped water supply. The past few years have given rise to sales of "pure water," sold in sachets

[4] Ayodeji Olukoju is a maritime historian and Dean of the Faculty of Arts at the University of Lagos.

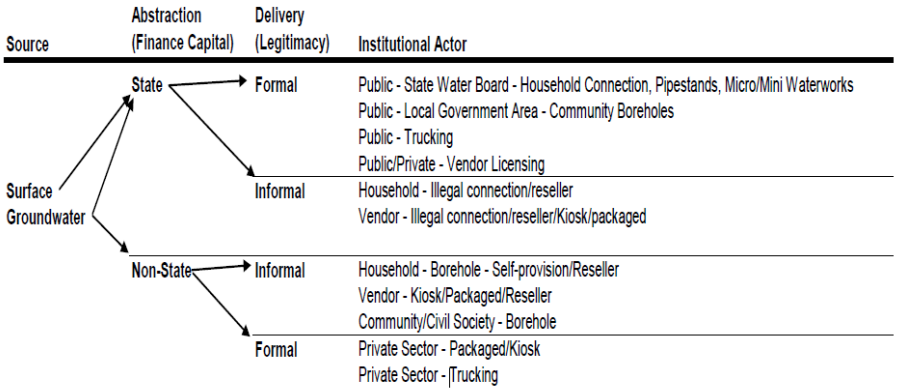
for the equivalent of 100 Naira/liter (5 Naira for a 50 ml bag), 2000 times more expensive than tap water. As public concerns about the quality of pure water have increased, producers in the industry have come under intense scrutiny by the National Agency for Food and Drug Administration and Control (NAFDAC), which has become increasingly aggressive about regulating production and sale of packaged water.

Finance, Implementation and Implications

As a result, many act out by not paying their water bills. The hydrogeology of Lagos makes this possible—wealthier households can afford their own boreholes systems and even make money by selling water or packaging it for distribution. Figure 1. Lays out the variety of actors involved in the delivery of water in Lagos. Today, less affluent households sink shallow and unprotected wells that nevertheless provide a water supply outside of the state, which technically owns groundwater but is not able to supervise unauthorized withdrawals given the financial and administrative requirements of enforcement. Although lax enforcement allows the poor to be served, this "solution" is far from adequate; they pay the highest prices for water and remain most susceptible to water-related illnesses[5].

[5] Among all groups, people who use vendors or shared water facilities spend the most for water (the latter most likely because they buy vendor water as their secondary source).

Figure 1. Types of Providers in the Water and Sanitation Sectors



In 2005, the World Bank announced its backing of water reform in Lagos (and Cross River) state with a 30-year US$200 million International Development Agency (IDA) loan at .75 percent interest designed to improve water treatment and supply reliability, as well as increase the commercial viability of the Lagos water utility. In a continuation of the long history of water planning in Lagos, the majority of the funds are for improving water treatment and expanding the capacity of the existing network not for expanding the reach of the network. To secure the loan, the Lagos government had to pass a water law that would create a private entity to receive loan funds. This was accomplished with the passage of a bill in December 2004 that privatized the state's public water supply system. Officials were also eager to divest the state of the water corporation, given that it had a debt of more than Euro 88.7 million (roughly USD 117 million) at the end of 2004.[6]

[6] See IRC. 2004. Nigeria, Lagos: bill signed to privatise water sector. Source - Africa South of Sahara. IRC International Water and Sanitation Centre, Monday, December 6. http://www.irc.nl/. Massive privatization of state-owned corporations has been underway since October 1998, when the Bureau of Public Enterprises invited local and

According to the former LWC Managing Director and Chief Executive Olumuyiwa Coker, the true goal of privatization in the water sector is to overcome what the CEO calls the "paradox of water" the situation where the urban poor pay the most for water. Privatization is not without controversy, however. The fact that nearly half of the population must source all or part of its water supply outside of the public waterworks and that the majority are the urban poor has had many in civil society fearful that privatization will exacerbate the paradox.

Although the new water law includes provisions for tariff regulation, local advocates argue that the legal structure of the LWC essentially combines the policymaking, implementation and regulatory aspects of water supply into one entity that operates autonomously from the state government and reports directly to the Governor. Sources in the LWC admit that the major challenge for improving water supply in the state will be reaching more households, especially in the impoverished parts of the metropolitan area, the oldest areas near Lagos Island and the rapidly expanding periphery, such as the Lekki Corridor on the eastern side of Victoria Island, where formal infrastructure is nonexistent and housing is haphazard and overcrowded. This problem becomes acute for the urban and peri-urban poor, who are often disregarded by a public governance structure that regards their living spaces as temporary, illegitimate and subject to slum clearance. This pattern of governance began in the colonial era, when the first public waterworks was introduced without consultation and taxes were imposed to pay for a scheme that initially did not serve the masses subject to colonial rule.

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international investors to express interest in more than twenty-eight public companies. This effort is thought to be the largest privatization scheme in Africa (Also see Obadina, Tunde. 1998. Nigeria unveils new privatization plan Africa Recovery 12(3), December: 4).

Household Surveys on Water Delivery

Data for this paper derives from a multistage cluster sample of 454 male and female heads of households, drawn from 12 neighborhoods and 4 local governments in Lagos. Face-to-face ethnographic surveys were conducted in Lagos between October – December 2007. Work in country was done in collaboration with the University of Lagos along with a local non-governmental organization (NGOs) involved in the water sector— Pan African Vision for the Environment (PAVE) in Lagos. Staff of each organization helped with the recruitment and supervision of enumerators and in carrying out the selection and mapping of enumeration areas. Sampling was done utilizing Nigeria's 2006 census data and detailed street maps of both cities.

Respondents were asked how much they paid for their primary and secondary sources of water. Because there is variety in how sources are obtained, enumerators reviewed with each respondent a list of uses for each water source, the container used to collect water and its size (or, if piped, to estimate based on a container of a given size of their choosing). This method of obtaining the price of water was not always applicable (some reported that their water costs were included in monthly rent. Others pay monthly water rates, although this was rare. Currently, monthly water rates are fixed by residence type (e.g. apartment block, flat, or house,). In those cases, open-ended responses were given. For still others, water is obtained free of charge. This can occur through the generosity of neighbors or when water is bundled with rent (as noted above) or if a house has installed a borehole (aside from the initial investment) or where the LWC or Edo State Water Board has failed to collect payment. In all

cases where respondents reported a price paid for water, the description of payment was converted to a cost in Naira per liter (At the time of the study, from the last quarter of 2007 to the first quarter of 2008, 1 US Dollar (USD) equaled approximately 118 Nigerian Naira.)

Summary figures for the price of potable water in Lagos show that secondary sources tend to be more expensive than primary sources. This reflects the use of packaged water as a backup to obtain potable water when the primary source of potable water is unavailable. Still, there is also lot of variation in the average price paid for primary sources of potable water by neighborhood in Lagos. Additionally, across the study area there is a lot of variation around the mean. This diversity reflects the diversity of household sources of water and their respective prices. In order to make sense of the wide range of water prices, it is necessary to look at the price of water by its source. [Insert Figure 2.]

Lots of variation around the mean price of each water source could also indicate opportunism in the sector. It could also just reflect spatial variation in the supply and demand for water. Among poorer households, the use of sachet water is common. It is a more affordable and convenient way to buy what is perceived to be potable water when taps do not flow or do not exist. The problem is that the going rate of 5 Naira per half liter can be 50 times more expensive than water that can be purchased from vendors and more compared to the price of piped water. Despite the fact that international monitoring agencies consider piped water and water from wells and covered boreholes to be safe, among residents there is a real concern with water quality, especially from piped sources, whether from vendors or gathered in buckets and basins from neighbors with boreholes. However, the cost of packaged water, even sachet water, is usually prohibitively high as are the costs to treat water (e.g. the fuel

needed to boil water). Vendor water also varies in price. Where higher prices can be charged, they are. In Lagos, the enumeration team was quite surprised, for example, by the wide range of vendor water, sold by jerrycan. Excluding power outages, the prices ranged from 5 Naira per 25 liter jerrycan to 20 Naira for the same sized container.

For households that used borehole water located on their premises, respondents were asked if they actually owned the borehole system. In total, 30 households in Lagos fell into this category. Useful information was obtained about how much such households invest in their water, share with neighbors and the problems faced. Given the rapid expansion of boreholes throughout the study area which are truly offering an alternative to households without sufficient connection to piped water supplies, these findings are of particular interest to policymakers. On average, households reported spending between 15,000 to 350,000 Naira. In Lagos, the lower-end figures refer to deep well installation.

In asking residents in neighborhoods in Lagos, where wells are common, particularly the closer an area is to the coastline, deep covered wells in Lagos cost a half to a 1/3 less than boreholes. In Lagos, 17 of the 30 households that own boreholes said they supplied water to their neighbors. Surprisingly, only four borehole owners reported charging neighbors to access the water. In this sample, Lagos households share water as a gesture of goodwill or to incur favor among neighbors with very disparate economic circumstances. There are also other dynamics involved with community relations between wealthier and poorer households in neighborhoods that came out during the interviews, which will be discussed in the next section.

Each respondent was also asked additional questions about whether they consider their household maintenance to be expensive and what factors contribute. For example, the cost of

water is bound up with the cost of energy. During the power outages that occur throughout the day and night across the country, households with boreholes that have not stored enough water in storage tanks must use fuel to run their boreholes. For those houses that sell water to vendors and neighbors in the community, the price of water immediately doubles when the power is out. In fact, the street price for most consumer items and services doubles when the power is out, as vendors and retailers attempt to recoup the high cost of using fuel to power generators. Also, in response to most recent problem with their water sources, a number of individuals responded that the cost of water was a problem. As mentioned in the Introduction chapter, there was public outcry over several attempts by "pure" water manufacturers to raise the price of sachets by 100% to 10 Naira per 50cl (half liter) bag. In addition, ongoing efforts in Lagos by the water corporation to aggressively introduce metering will raise the price of water for individual households and others who purchase water from those households[7].

Perceptions of water privatization

There was an additional section of the survey for Lagos households, asking about awareness and expectations for the private sector participation project begun with the passage of the Lagos State Water Law in December 2004. The law paved the way for USD $100 million in IDA loans to Lagos State to improve water quality, supply and the commercial viability of the sector (World Bank 2005, 2005b). Because the needs for improving bulk water supply

[7] Just before departure from country, the author saw an article buried in the middle of a business weekly about LWC plans to shut down public pipestands and spread meters, citing public safety and water theft. NGOs in the sector caught wind of this news and had begun to discuss organizing around this new development on behalf of the communities they serve. 2008. Business Day. Lagos-Introducing pre-paid metering system in six highbrow areas of the metropolis. pg. 11, Tuesday, Feburary 11.

treatment are so great in Lagos, the largest share of funding from the World Bank loan is devoted to improving surface water treatment at the major waterworks until they operate at 80% of capacity, 80% of the time. (World Bank 2005b). Improving household and community level access is left to the private operators of the proposed ten water districts who will be responsible for household delivery of bulk water supply. Although a major foreign investor has not yet stepped in to take over water distribution operations and the plans for dividing the state into districts seem to be on hold, project funds have been released, the project monitoring unit with an NGO representative has been established, and there have been planned activities to upgrade Lagos' water infrastructure.[8]

Among residents, awareness of the water reform program is low, with only 23% of respondents (105 households) indicating that they were aware of it (see Figure 3). This was notable, as I recall that the announcement of the $200 million in assistance from the World Bank to Lagos and Cross River states for water reform was announced several times on the news in the summer of 2005. It appears that after the initial publicity there has not been a lot of effort to promote awareness of the program itself. However, there are some visible changes to LWC operations, based upon the appearance of the website, which has instituted a customer feedback form and complaint telephone line. However, it is not clear how much the website is actually used. For example, the user forum has no registered users and is filled with spam posts.

Figure 3 also displays the summary results of household expectations for the private sector participation program. Although awareness was low, people tended to have favorable

[8] Per interviews with the local government chairmen in Ifako Ijaiye and Surulere, and conversations with NGO key informants who were part of the original coalition formed to increase transparency in the development and passage of the 2004 water law.

expectations for the involvement of the private sector in water supply, with 54% (247) respondents saying that PSP is likely to improve water supply in Lagos. Most (41%, or 186 households) felt that the likely effect of water privatization would be lower water rates and improved supply. At first glance, these results may seem surprising given the high profile of disastrous and/or politically contested water privatization case studies in Bolivia, the Phillipines, South Africa and other locales (Akpan 2004). Despite this, privatization seems to be viewed more favorably in Nigeria.

Figure 3. Lagos Residents Perceptions of the Impact of Water Privatization

Aware of Lagos Water Private Sector Participation Program?

	(n)	(%)
Yes	105	23%
No	316	70%
Decline/Don't Know	33	7%
Total	454	100%

PSP Likely to improve water supply

	(n)	(%)
Yes	247	54%
No	163	36%
Decline/Don't Know	44	10%
Total	454	100%

	Likely effect of PSP on Water Supply	(n)	(%)
1	"Lower water rates, improved supply"	186	41%
2	"Same water rates, improved supply"	48	11%
3	"Lower water rates, improved supply"	46	10%
4	"Higher water rates, worse supply"	48	11%
5	"Same water rates, worse supply"	3	1%
6	"Lower water rates, worse supply"	18	4%
7	"Don't know or decline to state"	105	23%
Total		454	100%

Figure 4. Percentage Willing to Pay by Enumeration Area

Local Government/ Enumeration Area	% Willing to Pay to Improve Quality	Service	Time
1 Ifako Ijaiye	79%	71%	71%
2 Ifako Ijaiye	43%	43%	43%
3 Ifako Ijaiye	60%	57%	57%
4 Shomolu	76%	76%	76%
5 Shomolu	52%	52%	52%
6 Shomolu	70%	68%	68%
7 Surulere	53%	50%	50%
8 Surulere	33%	36%	36%
9 Surulere	83%	83%	83%
10 Amuwo-Odofin	65%	60%	60%
11 Amuwo-Odofin	56%	56%	56%
12 Amuwo-Odofin	43%	39%	39%
Lagos (Avg. %)	**59%**	**58%**	**58%**

Figure 5. Average Additional Amount/Month Willing to Pay to Improve Water Supply (Naira)

	Quality	Service	Time
Lagos	385	364	320

Are families in the study area able to obtain, every day, sufficient quantities of clean water for healthy populations (e.g. the bare minimum of 2.5 to 3 liters of potable water per person and 15 liters for all needs)? The follow-up question: What is involved in obtaining that water? To answer the first question, we have to look at the dimensions of adequacy and safety. Do people consume at least the minimum amounts (in liters) of water from improved sources? How do they rate the quality of their water? In reviewing those five dimensions of access covered in this section, most households seem to manage to get a hold of the minimal requirements of water from improved sources. However, this varies by residential location. Residents in three neighborhoods of Lagos (one each in Shomolu, Surulere and Amuwo-Odofin LGAs) reportedly consume very low quantities of water, below the minimum needed for healthy populations. Also, residents in Lagos were more likely to report experiencing water quality problems at the time of the survey, which increases the likelihood of people turning (if they have the financial means) to more expensive sources of water, especially for drinking, oral hygiene and cooking. This tells us that while most households are somehow able to obtain at least the minimum amounts of water needed per international survival guidelines, not all are able to.

This directly leads to the second question. How is that water obtained? We know that for some households it involves long distances, 20 minutes or more. For others, it means paying for water from private sources. This could mean turning to packaged water when boreholes are not an option. Sometimes higher prices for the same source (borehole water) are charged by informal and formal vendors in different parts of the city. We also know that reliability is a factor, leading to the reality that nearly all households must patch together their

daily supply from two or more sources of water. Nearly 150 households do not have a secondary or alternative potable water source, even though their primary source is not reliable. Almost 100 households in the study lack a consistent primary or secondary supply of water and have to figure out where to source water on a daily basis.

Using the five dimensions of access provides a summary picture of water supply conditions in the study area, but what are the most pressing water supply problems facing households from their perspective? In both metropolitan areas, unplanned interruptions (primarily due to power supply problems) are the most frequently reported problem. Households also reported recent problems with water quality, cost and a combination of problems. The interesting dynamic is how these reported problems relate to self-reported access measures. Unreliability was the most frequently reported recent problem and is a major source of dissatisfaction as it is difficult to plan water collection. On the other hand, most households rate water availability over 60%, with many rating it higher. This is partly an artifact of how the question was asked, but it will always be difficult to measure availability when households already used multiple sources depending on the purpose for which the water is to be used, as quoted in one of the interviews. The other common measures of access used in monitoring international development like the Millennium Development Goals (MDGs), such as distance to the source, do not capture the reliability of water supply, yet from the perspective of the consumer it appears to be a critical factor in measuring access.

And yet, this only becomes evident during the interviews. In the survey, the reliability and unplanned interruption variables have little direct impact on EVL behavior. However, the cost variable is significantly associated with it, making voice more likely in both cities. When you

talk to people during the interviews, it becomes clear that the problem of cost is not only price per liter, per se, but the cost of water arising from unplanned interruptions. The quotes from those interviewed in the previous section of this chapter show the insidious ways that water cutoffs incur costs – for example, having to rely on multiple sources of water with different price points, being forced to purchase vendor or commercial water when taps do not flow or boreholes cease to run (especially in those cases when water supply is supposed to be part of rent), the fact that the price of water from private boreholes doubles during power outages since they are powered by petroleum generators, that people have to invest in large and numerous water storage containers in case water is not being sold due to outages (this practice also has associated health, risks as disease vectors for pathogens causing diarrhea, typhoid and malaria), being forced to travel to other neighborhoods in search of water, and the cost to treat substandard sources of water (from wells, rainwater collection or river water).

A Closer Look at Delivery Using Interview Data

The interviews with respondents around questions of access to water supply are very revealing. Like the survey data, which showed that problems respondents identify have a more direct impact on behavior than specific access measures, the interviews highlight the many factors that affect access and the ability to organize, such as the role of landlords, and neighborhood context such as safety and affluence. In many ways the interviews provided some context to the survey data, such as the significant role of religious associations. Almost all those we talked to discussed the importance of faith and prayer. In fact, for many, prayer is the only real recourse and voice, as it is, is directed towards God. The sentiments, expressed in pidgin, of one respondent in Mushin (Idi-Araba area), Lagos characterized the feelings of many on the lack of service delivery:

> LA3: Nothing easy for Lagos. Nothing easy! Everything, water…Even one time we dey line up to fetch water for well. The well go dry when we don fetch, fetch, fetch, fetch. Water don dey dry. Sanitation, everywhere they dirty. Back of our window now, so so water. Everywhere they smell. Now so we dey chop, dey breathe, dey talk. It dey very difficult. Light e no dey they. I don tell you now well we dey fetch. We no get pipe. We dey share am. We dey share toilet. We dey share bathroom. We dey share the well. Everything na share."

The Lagos project supervisor asked the respondent if disease had broken out in the areas as a result of the environmental conditions. His response was that each person is on his or her own:

> "Eeee! If disease come, who know if disease catch anybody? If you sick you go treat yourself. Now you sa be. Oga, na true I dey tell you."

He ended his response to this line of questioning by saying that it is only God that provides:

> All, na god they do am. Safety if you no lock your door they go enter your house, so all is God. Nothing Nigeria give us. Nothing they give us. Safety we no get. If you no lock your door, now you sa be."

The presence of flowing, piped water was practically non-existent throughout the study area. People obtained household water in an assortment of ways, often requiring an outlay of money or a lot of effort on a daily basis. One woman was asked if she had piped water and paid a utility bill, answered thus, mentioning the hired hands—many from the predominantly Muslim northern parts of Nigeria—who deliver water:

> LA4: "For water we don't do that. For electricity we pay our bill. But for water either you fetch water from the normal well or you call the mallam. They operate in FESTAC."

When pressed about the relative difficulty in accessing water in her neighborhood, the FESTAC area, once the pride of the country being a fully planned residential estate built for the second World Black Festival of Arts and Culture in 1977, she noted that piped water does not reach her area:

> "I'm used to Lagos lifestyle. Accessing these services is not any easy at all. When you talk of transportation, the roads are bad not only in FESTAC, in every other places. And when we talk of water, there's no water in FESTAC. They don't make water available for us. We have to buy water. All that has stopped working. Water doesn't run out from the tap. And talking about sanitation drainages, they are very, very bad in FESTAC this day."

One male respondent in Agege noted that there are physical taps but no running water. He mentioned that the Lagos Water Corporation sends out bills but that no one pays because there is no water:

> LA1: "To be honest with you, there's no paying for water rate…They just send the bills but there is no running water from the government there. There is no tap coming in the whole of Agege…There's no public tap. They've all run dry. So everybody has to rely--Everybody in Agege relies on a borehole in there home. You have to look for your own water supply. So the issue of pay or not pay does not arise. Water company does not even exist."

A woman in Shomolu elaborated on the many sources of water and treatment methods for different purposes:

> LA7: "Ok, the one we drink we buy the water. There's a big dispenser there. The big bottle. It is bigger than Eva bottle. It's a big bottle you put it on top of water dispenser. You put it like a tap. That bottle is 300 Naira. And that will last for a day or two depending on the consumption rate. That is the water we drink. And if we don't drink that we buy the Eva water. And if we don't drink that—though we stopped that for some time now—we boil the water and then put it inside a filter. We have a filter to filter it. All this water we don't get it from public tap because the taps are not running again. There are people that have boreholes around this environment. Like in this compound we had a well. But the water from the well is not clean enough that we can drink so what we do is those people that have boreholes we get the water from them. Those are the water we boil but those one is clean, but being that the environment is very dirty we don't trust water we get directly. Those are the one we boil, then filter, and then drink. That's how principally we get our water."

In general groundwater, borehole water in particular, is viewed as clean. However, even water that is not used for drinking is often treated. She mentioned using a chemical to treat bathing water.:

> "There's a well in the house, in this compound. We draw the water from the well. We use that to bath. We always have Dettol, put Dettol, use that one to flush. And also the

> water from the borehole is very clean. It goes deep deep down gets to the river beneath so that water is very clean. So we get those ones and that one we use in cooking. And then the water from the well we use it in bathing and flushing the toilet as well as washing the clothes."

Although water from private boreholes is sold throughout both areas, there are exceptions. In some neighborhoods, homeowners who have boreholes provide the water to their immediate neighbors for free. The same respondent noted that this was the case in her area when asked if she paid for borehole water:

> "Not the borehole water. People around they just allow people to get it because they see it as service, yes. And then the market is down there, they have a borehole there you can go there and fetch so we put jerrycans inside the car and then we can fetch from the market."

Still, this is not a panacea, as water supply is connected to the availability of electricity. The most frequently reported water problem in the survey was unplanned interruptions, which make it impossible to get water from taps , neighbors or vendors. The woman described the impossibility of obtaining water when the power goes out:

> "But the problem is when there is no light you don't get water from the borehole. Because the borehole uses electricity to pump water to the big tank. And when the water in the big tank gets finished and there's no electricity for the borehole there is no water."

Aside from power outages and a general lack of service provision there are also specific problems for households that rent, which affect access to water, namely the actions of landlords. A woman interviewed in the Ikeja local government area (where the state capital, the Alausa Secretariat, of Lagos resides) described the problem with her landlord, who had promised water as part of her rental agreement yet had not delivered on the promise:

> LA8: “One of the basic necessities that was promised was water. The landlord here is with borehole and water flows. That is what I was looking forward to, like having constant water supply. But since I moved in I guess the borehole developed some fault. So I will have to, like, buy water sometimes. And the plumber came to fix it up yet after it broke down again. So we’ve been like buying water and it’s not been really, like, funny.”

This is one of those cases where the price per liter of water does not really shed light on the true cost of water. In the descriptive statistics on access discussed earlier in this chapter, the survey results showed that cost was one of the main things people identified as the most recent problem with water. In the multinomial logistic regression, cost was significantly linked to EVL behavior. When I asked the same woman whether she had to pay for her access to the landlord’s borehole, she said it was supposed to be included in the rent, but that he had asked her and other tenants to pay additional money for maintenance:

> “Basically, in the agreement he really was like, it was provided free of charge. I wasn’t there for the occupants that had left. In the agreement we signed he talked about maintenance for the borehole. But the maintenance is quite on the high side because recently, for this one [flat], I just moved in and he was asking me for some thousands [of Naira], which was unreasonable.”

Natural conditions, like the ready availability of water in Lagos during the rainy season, shows the difficulty in getting individuals to pay water bills. One respondent, who noted that water was included in his rent was skeptical about the idea of paying a water bill, compared to electricity, which you cannot obtain without the power authority:

> LA3: “Water. Who go pay for water? Now to fetch water for well. Go well, go fetch your water. Bath. Electricity them go carry am come compound. All of us go join pay. Landlord go bring everybody share. If na 300 be your share per month na 300 you go pay. They go carry am join put for NEPA.”

At the same time, he is not happy with his circumstances. The same respondent, whose whole family lives in one room in a 12 room compound (he called the living arrangement by the colloquial, “face me, I slap you,” when asked) deplores the fact that water, toilet and bathroom are shared in his compound:

> “So only for morning. Because everyone want come out go for their work, everybody want bath, queue for bathroom. We go queue to shit. We go queue to fetch water. So now only for morning. But for afternoon when people don’t go you fit fetch water as you like. Na so.”

He also mentioned population density, one of the key issues affecting access in both cities, and mentioned by more than half of those interviewed:

> “People plenty-o! Even for this we compound. The people we dey, the 12 rooms, every house we dey get like five-five people. Way na too plenty now… It dey affect how we dey fetch water.”

The problem of accidents happening due to where boreholes are located is an issue of planning. This interview wasn’t the only one to mention the link between planning and access to water and other services. One man in Ifako Ijaiye LGA in Lagos summed up the planning problem, linking it to citizenship:

> LA10: “Well, the most important thing is education. Most of the people are ignorant of the fact that government is not different from them. That education has not sunk in. Secondly, it’s not a question of putting block on block that makes a house have amenities. There should be a layout. If government is up to its responsibility, if you have a new area people are moving in there should be a layout first. A layout in terms of road, electricity, water, before they move in to build. But because that layout is not there people build anyhow. So accessibility becomes a problem. Now if accessibility

becomes a problem how do you move around to get your data and all these things to be able to plan for the people?"

Conclusion

Looking at the development of urban form and water supply in Lagos illustrates how a history of racially- based segregation and social divisions within society become visible in the form of uneven service delivery. Colonial policies, which facilitated resource extraction, entailed changes in property ownership, the destruction of the autonomous traditional rule that governed land ownership and land use, and massive population displacement coupled with infrastructure funding decisions that left out the displaced. When discontent boiled over into street demonstrations led by traditional leadership, the British removed these leaders, which was only possible because the entire structure of indigenous governance had been transformed to serve the ends of the colonial government. This haphazard and narrow colonial infrastructure planning inadequately served the city for years to come.

Comment [A1]: You've said remover of leadership earlier on.

Historian Patrick Cole describes the "real Lagos" as culturally heterogeneous, yet governed by a strong traditional hierarchy that has always wielded real religious and economic power defying the "thin veneer of 'westernisation' " that only a superficial observation would permit (1975, 28). Along these lines, Harvard Professor of Architecture and Urban Design, Rem Koolhaas, talks of Lagos' "culture of congestion" that describes the resiliency of the people and their ability to transform urban problems into opportunities (Koolhaas 2003). For instance, traffic jams are so ubiquitous that they have become marketplaces where people actually shop for basic food, supplies, clothing and convenience items from their cars. In the same way, the network of water sellers, bottled water vendors, boreholes, quasi-formal water suppliers

affiliated with LWC, tanker trucks and the like speak to the willingness of people to pay for services that meet their needs. However, others warn against romanticizing the deep poverty and inequality present in Lagos or the risks involved in the daily struggle to survive (Gandy 2006). While parallel supply routes for water and sanitation services may be functional, they also overcharge and undersupply the poor, which include the indigenous who are constrained to live within particular spaces in the city and the growing periphery of migrants from other regions.

Both metropolitan areas have water histories that relate to the present in important ways. In Lagos, the connection between inequality and rights are relevant to the struggle for access to basic services in Lagos and draw attention to the relationship between location and processes of social exclusion, specifically land tenure and service delivery. Through this recognition and active collaboration with informal non-state providers that are already providing services to the poor and low income residents, Lagos state can develop new approaches to providing equal and sufficient access to services. There is growing consensus that this means mainstreaming or prioritizing the poor in every facet of service delivery planning and budgeting (World Bank 2003; Grindle 2002). For example, direct engagement between affected communities (possibly through or assisted by civil society actors) and government can lead to citizen participation in the public priority and budgetary decisions that affect their access to fundamental services such as water, sanitation, transportation, energy and healthcare (Grindle 2004; Tendler 1997).

In Lagos, those who live in the oldest parts of the city, close to the sea, where well water is often brackish, must depend on the services of the state water corporation, using sometimes elaborate and often makeshift water storage systems for frequent service interruptions. In the meantime, quasi-exit occurs through the existence of older systems of water supply that continue to operate in parallel to the piped system. In the history of water provision covered in Chapter 3, community wells served the citizenry of Lagos before the first colonial water works at Iju and continued to do so after its commissioning. In fact, most of the metropolis remained without piped water all the way until the end of the colonial era in 1960.

However, there is much more exit at the upper end of the water quality spectrum. Those households that are able to, manage to purchase water from commercial vendors (formal and informal). Even more striking, however, is the fact that in vast parts of the metropolis in Lagos, massive exit is taking place in the form of private water systems, typically boreholes that source water from deep underground. Not only do these private water works supply an individual household, they often serve an entire neighborhood and beyond. While some consider it a civic duty and a form of social reciprocity to provide water to their neighbors, others sell water to their neighbors to generate income. In Lagos, this takes place on a large scale, through the extensive informal system of vendors who manually carry water to homes and business throughout the metropolis on a daily basis.

Taking it another step further, many of those who own private boreholes have taken to packaging their water in the ubiquitous plastic sachets, selling it as “pure water” for drinking. (I mentioned in the introduction that there has been a strong effort to crack down on illegal vendors of pure water sachets by the Nigerian Food and Drug Administration and Control,

NAFDAC. However, new sachet producers emerge every day, selling water of questionable quality). Paradoxically, by packaging the water in small half-liter sachets, they can charge many times the price of selling water by the bucket. On a larger scale, some private bottled water companies have turned to selling water by the bucket directly to the public, as we observed in Amuwo-Odofin local government in Lagos.

The case studies point out the need for careful consideration of the role of markets and competition in the delivery of public goods. The choice cannot be one of either or but how markets and political mechanisms can work in tandem, in this case, to improve service delivery for everyone and not just those who exit.

Water scarcity—characterized by a lack of a piped water connection to the household or on the premises—is a major problem in both cities. Most residents use groundwater as their primary water supply for drinking and other purposes, whether they own a borehole system, use one owned by a landlord, or must purchase water from households in the neighborhood or vendors who deliver it. The results of this study corroborate other studies that have shown that access is complex. While the challenges of water supply in both cities are similar, albeit different magnitudes in terms of population size, there were strong differences between and within the cities. These differences point to the need for approaches to governance and reform that look at how water markets are shaped dynamically by local realities.

Looking at the urban water market as a dynamic feedback system, operating within a specific policy environment, shaped by access, attitudes and behavior at the individual, household and neighborhood level that send signals to providers that respond in ways that increase and decrease access, could provide a useful lens through which to view and identify

specific local challenges to basic services delivery that could allow for well-targeted interventions. For example, the Voice for Water survey results show specific policy variables (some unique to Lagos) that could be targeted to improve access. These include improving reliability, standardizing the price and quality of water across a neighborhood or larger geographic area, creating systems to quickly resolve supply problems, creating incentives to lure back those who have exited with private boreholes, working with existing voluntary associations to help with monitoring and improving service delivery.

The main thing is that the corporations put the cart before the horse and demand payment before service delivery has improved, basing this call on the illusive legitimacy of the state. When the plan to privatize the Lagos State Water Corporation first emerged, the former CEO of the corporation said that people expected water to be free. My time in country has shown me the opposite, in fact. No one in Nigeria expects anything, much less services from the government, for free. There is a deep frustration, evident throughout my interviews and in conversations and observations, with paying for substandard delivery, such as receiving a water bill, when water only flows for 20% of the time. In principal, yes, you must pay for that 20% of water, but the moral calculation you make as a consumer and a citizen who has to constantly make daily arrangements for water, even though there is a pipe that should be supplying that water, is quite different.

On the other hand, many people expressed during interviews their willingness to pay for water should it begin to flow in their area. The borehole solution which has been so widespread is no panacea. They are expensive, prone to fault, and on an environmental level, are not a sustainable long-term solution. Governments can think creatively and incrementally. For

example, one person I interviewed who owned a private borehole said they would be willing to pay the water board to test their groundwater and treat it. Perhaps this could be done in exchange for households providing water to a larger area. There are many solutions possible, but people must be engaged; their voices need to be heard.

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