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Scarce, costly and uncertain: water access in Kibera, Nairobi

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## **Scarce, costly and uncertain: water access in Kibera, Nairobi**

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Abstract:

This paper explores three stories in partial answer to the question: why is water scarce, costly and uncertain. First, it describes the ways that households and particularly the women who are the most frequent collectors of water experience scarcity through heavy expenditures of time and money, considerable investments in water storage and routinized sequences of deferred household tasks. Second, the paper describes some of the 'public private partnerships' for water supply which have grown up in this stateless location. A history of state antagonism to informal settlements like Kibera and the concomitant absence of property rights, institutions and market regulation have contributed to the growth of these partnerships, which academics call corruption and residents call cartels. Third, the paper describes three experiments in water and social engineering undertaken by sociologists in the Nairobi Water Company. These experiments constitute an attempt to invent municipal institutions and infrastructure in a city the size of San Francisco where mafia-like organizations remain strong.

Key words: slums, water supply, institutions, cartels, deliberative democracy, gender, water storage.

## **Scarce, costly and uncertain: water access in Kibera, Nairobi**

### **1. Introduction**

Water in Kibera is scarce and costly, and its supply uncertain. On good days, women and others collecting water for their households spend just under an hour searching for vendors with water, queuing up, and then walking home with 50 lb containers carrying water (Brocklehurst, et al, 2005). On bad days, collecting water can take many hours. One estimate suggests that households spend 20% of their income on water (UNDP 2006). Women interviewed say they frequently curtail clothes-washing, often postpone

baths, and sometimes have fewer meals, when water is unavailable or unaffordable. One corner, wall or under-table space of each ten foot by ten foot, mud wall and tin-roof dwelling has multiple containers in which water can be stored. With uncertain access to water, each household has to store water within the house.

Kibera is an informal settlement or slum in Kenya's capital, Nairobi. Sixty percent of the city's population live in about 160 informal settlements, 25% in Kibera alone. A significant and rapidly growing part of the world's population, perhaps a third, lives in informal settlements, more commonly known as slums (Davis, M 2006).<sup>1</sup> Service provision and the growth of institutions in these areas is of great significance to well being.

The reproduction of inadequate water access in Kibera involves social relations which are not fully captured by ideas of corruption (Transparency International 2008, Davis, J 2004), water mandarins (Swyngedouw 2004), or water mafias (Eichenseher 2008; Collignon 2008: 52). Burdensome access to water in this huge and complex city arises from at least three interlocking factors: the unwillingness of the postcolonial government to accept the legitimacy of the growing settlements it inherited, the unregulated context of vendors and landlords building enterprise on shaky rights, and the rise and fall of gangs and cartels operating with connections to city government. There is no adequate and accepted term for these informal settlements or slum cities. Calling them 'stateless locations' would highlight one formative element of their condition.<sup>2</sup> These unpropitious foundations notwithstanding, residents have built livelihoods and community, and new state institutions advised by international agencies are beginning to undertake ambitious experiments in water supply.

There is a growing literature suggesting that comparable contexts influence water provision in other cities of Africa and Asia. Plummer and Cross (2008) describe how to respond to 'corruption' in the water and sanitation sector in Africa and Collignon (2008) describes opportunities for connections between public officials and private traders. Gandy (2005) describes gang control of illegal connections in Lagos. Agarwal and Bapat (2003) and Gandy (2008) describe water supply conditions in Mumbai. Sekhar (2005) describes Bangalore. Davis (Davis, J 2004) describes South Asia.

The newly-devolved Nairobi Water and Sanitation Company, with support from the World Bank and other international agencies, has embarked upon an ambitious set of participatory initiatives aiming to improve the dismal state of water access. These initiatives engage with a complex, poorly understood economy and society, in which

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<sup>1</sup> UN HABITAT defines a slum as an area where households lack one or more of the following 'durable housing, sufficient living area, access to improved water, access to sanitation, secure tenure' (UN HABITAT 2006: 19). See Davis, M (2006 Ch 2) for generality of conditions.

<sup>2</sup> I thank my colleague Craig Reinerman for suggesting this term.

livelihoods, rules and institutions have been shaped by decades of exclusion by the state. There are reported to have been gangs and cartels controlling water supply in the past, and at least localized cartels continue to operate in conjunction with lower level officials of the water company. A recent heavy-handed attempt by the Kenya Police to wrest control of water and electricity services from gangs and cartels appears to have reduced the influence of one gang, but made water infrastructure experiments more difficult.

This paper seeks to describe some of the reasons why water in Kibera is scarce, costly, uncertain and sometimes contaminated, and examines responses to this situation. It is based on interviews with households, water company officials and former officials, water vendors and landlords and on the experience of the second author working and living in Kibera for three years.

Section Two of the paper describes water access in Kibera. Section Three summarizes some of the difficulties reported by the consumers of water and their responses to them. Section Four describes some of the range of organizational forms found in the water system. Section Five describes some of the consequences of a wave of mass disconnections organized by the Kenya Police in August 2007. Section Six examines some of the interactions between water vendors, plumbers and meter readers which make water supply scarce, uncertain and costly. Section Seven describes the recent history and current state of experiments to improve water access in informal settlements.

## 2. Water in Kibera

Kibera is a 250 hectare informal settlement in the south west of Nairobi (shown in red on the map below) with a population of 700,000 to one million. It was established after World War II by the British colonial government to house soldiers from Sudan who had fought in the British army. These people, mostly from the Nubian ethnic group, were not given title to the land, but many of them have become the *de facto* landlords for Kibera through their informal rights as 'structure owners' (Water and Sanitation Program 2005: 3). The settlement is adjacent to Nairobi's industrial area and a relatively affluent residential area, both of which provide employment for Kibera residents. (KWAHO 2008; Brocklehurst, et al 2005).

A survey of 674 households in the three largest Kenyan cities (Gulyani 2005: Table 2) found that water supply was the top development priority for both rich and poor. Water and sanitation provision in Kibera are so inadequate that rates of infant mortality, under five mortality and bloody diarrheal infection, are 3 times the average for Nairobi as a whole (UNDP 2006: 38).

Women and children purchase water in 20 liter, yellow plastic jerry cans from water vendors who store water and sell it from standpipes. Most of the jerry cans once contained cooking oil. The streets of Kibera are narrow, unpaved and uneven. Many streets have open drains, doubling as sewers, which are periodically unblocked by residents shoveling mud and trash onto the street. (There are neither sewers nor organized garbage collection in Kibera). It is difficult work carrying heavy loads of water from standpipe to home.

There are estimated to be 650 water vendors in Kibera (Brocklehurst et al 2005) connected, often through a combination of legal and illegal pipes, to the few water mains running through or near to Kibera. Thompson et al (2000) note the rising importance of water vendors in East Africa. Because supply to the mains is rationed (rationing is described below) or uncertain, most have at least one storage tank, and some have ten or more (made of rusty sheet steel). Vendors sell water from standing taps in front of their houses or small offices. These arrangements have come to be known, in the official literature, as water kiosks. About 20 storage tanks and kiosks have been installed by community based organizations, and are run by community organizations or women's groups (Brocklehurst et al 2005).

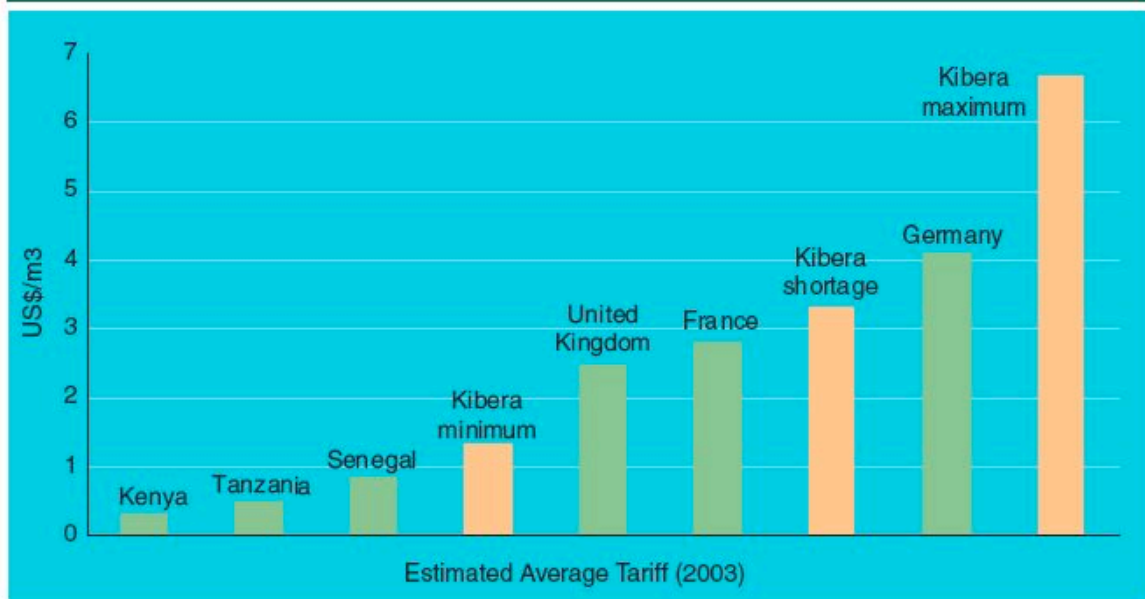
### *Prices*

Prices for a 20 liter (4 gallon) jerry can of water vary from K Sh 2-3 when many vendors have water, to K Sh 5-10<sup>3</sup> when few vendors have water. An express rate of K Sh 20, is widely reported to be charged giving the less penurious consumer the right to go to the head of line. (One trader said express prices are no longer common because they raise too much opposition from those in the line). A 2005 comparison of Kibera water prices with utility tariffs in Kenya and other African and European countries (Figure 1) indicates both the substantial range of water prices in Kibera (higher during shortages) and that minimum Kibera prices are higher than prices in Kenya and maximum prices are about double European prices. In August 2008, a Nairobi newspaper reported (The Standard 2008) that water in informal settlements was selling for K Sh 15 to 30 per 20 l jerry can. Brocklehurst et al (2005) attribute high prices to the capital costs of traders (laying pipes and buying storage tanks; bribes for connections), the tariffs charged by the water company, and to vendors 'taking advantage of temporary shortages to make rapid profits' (Brocklehurst et al 2005:7) .

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<sup>3</sup> One US Dollar = approx K Sh 70 in 2008.

**Figure 1: Comparison of Kibera water prices<sup>11</sup>**



<sup>11</sup>The figures for average tariff in the countries shown are based on estimates from recent literature and accounts from utility experts.

FIGURE 1 WATER PRICES

SOURCE: BROCKLEHURST, MEHROTRA AND MOREL (2005)

### ***Rationing and shortages***

Water in Nairobi is rationed. Traders in Kibera have been told by the water company to expect water supply for three days out of seven. Different villages of Kibera expect to have water on different sets of days. When there are shortages in the reservoirs supplying Nairobi this may be reduced further. For example, in August 2008, the Director of Nairobi Water Company told *The Standard* (2008) that low water levels at Ndaikini dam, due to the failure of the rains, were to blame for shortage at that time. A survey in 1997 (Water and Sanitation Program 1997) found that 70% of water vendors did receive water for three days per week. Rationing is one well-publicized source of water scarcity. We describe others below.

Traders have responded to rationing in at least one way which tends to reduce the scarcity. Several of the larger water traders interviewed described without hesitation their connections to several of the mains pipes going through or adjacent to Kibera. For example, one said he had 'used a lot of money...to get pipe connections to [main] pipes #10, #4, #6 and Karanja. If one of them runs dry I can then get water from another one.' To do this, he had bought pipes and obtained permission from the Kibera land owners whose land the pipes had to pass, then made an arrangement with a water company plumber to get his pipes connected to the main (Interview August 2008). As we will see below, the Nairobi Water Company has difficulty distinguishing legal and illegal

connections, but only one of these connections can have been made legally (by law, traders are allowed only one). The different pipes mentioned are water pipes of different diameter which cross or run beside Kibera. (The work of laying pipes involves significant disruption, including to traffic. The second author has been told of the police closing roads at night so that illicit water pipes can be connected to a distant main.)

### ***Kenya water reforms and the rise of Maji Bora Kibera***

A change of government in 2002 brought policies focused on ‘good governance, devolution and a positive investment environment’ (Brocklehurst et al 2005:3). A Water Act in the same year separated water management from provision of water services. As a result of the Act, the Nairobi Water and Sewerage Department was separated from the City Council in 2004 and established as the Nairobi Water and Sewerage Company. Hereafter, we refer to NWSC as the water company. Although the water company is owned by the City Council, it operates autonomously and water revenue is now exclusively available for maintaining and expanding water provision. Franceys and Weitz (2003: 1095) suggest that this sort of change can challenge ‘vested interests with a new organizational structure.’

Both the City Council and, since 2004, the water company have sought funding and advice from the World Bank/UNDP Water and Sanitation Program. Funding from that source supported the Third Nairobi Water and Sanitation Program starting in 1988 which included a program to ‘infill’ mains pipes across Kibera and ‘enhance the role of the independent private sector in the delivery of water in Kibera’ (Katui-Katua and McGranahan 2002: 1). Before the Kibera Water Distribution Infilling Component was terminated (without completion), it had established that there was local support for a village water sellers association (Katui-Katua and McGranahan 2002: 24).

In 2003, a series of meetings, facilitated by the Water and Sanitation Program of the World Bank, led to the formation of such an association, called *Maji Bora Kibera* (better water for Kibera). Initially vendors were concerned about the water reforms passed in 2002. One of the architects of the reform legislation spoke to an early meeting. After a membership campaign, 500 vendors, out of an estimated 650, joined the association. The company was approached and a joint association-company task force established. A letter from *Maji Bora Kibera* to the company listed the major problems they faced: shortages, lack of bulk connections, illegal connections, corruption and lack of sewerage. They offered to engage in a series of initiatives to regularize connections, pay water company bills, stop bribes and report leakages (Brocklehurst, Mehrotra and Morel 2005).

The first chairman of *Maji Bora Kibera* (MBK) describes the discussions as follows:

‘Because [the World Bank/UNDP Water and Sanitation Program] were there as arbitrator, the Nairobi Water Company and the water vendors could be set up to discuss [concerns about water in Kibera]... I told the company all the loopholes, and how to move forward. [We] asked employees [of the company] to surrender their [advantages?], change their attitudes, and the water vendors also agreed to change their attitudes. [We] do not want this corruption to go on.

[Chairman continued, looking at a document from the company]: MBK committed ourselves, no illegal connections, no by-passes (we gave them this information), bills to be paid. [MBK was] committed to prevent corruption. MBK will offer free services to detect leaks and illegal connections. We surrendered everything. Discourage from cheating. We were converted from the corrupt people to the good people.’

(Interviews August 2008)

This 500 member association of water vendors / kiosk operators negotiated, according to the chairman, a written ‘minute’ that committed both sides to a process. [This ‘minute’ has since been mislaid.] Illegal connections could be regularized. Unpaid water bills could be resolved, with large disputed bills (‘which occurred during the corruption of the City Council’) waived and real bills paid in installments. MBK vendors would detect leaks and illegal connections.

All this broke down in 2007, a few months before the Kenya Police moved in to make mass disconnections. We describe that episode in Section Five. Before that we describe some of the water access conditions brought to light by interviews with households.

### **3. Consumer reports**

To get an introduction to conditions facing households, the first author talked with women from 14 households. Eight were members of Makina Women’s Group who had come together to organize a water kiosk. Another six were households identified to represent a range of livelihoods by one of KWAHO’s promoters of their solar disinfection system, SODIS<sup>4</sup>. So, these 14 households include activists and SODIS water users who may be more disadvantaged and concerned about water than the average. (A survey of a larger and more representative sample of households is ongoing).

Three aspects of poor women’s lives in Kibera speak to the difficulties they have gaining access to water. First, they note the time and cost of getting water. Water collection takes large parts of some days, and a significant slice of their earnings. Second, they describe the activities they have to curtail when water is scarce or unaffordable. All note that laundry may be deferred, showers may be foregone, and sometimes cooking reduced to one meal when water is scarce. Third, those who can afford to, own multiple jerry cans

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<sup>4</sup> For several years, the community based organization, KWAHO (Kenya Water for Health) has been working on water issues in Kibera. One of its largest campaigns is the regular promotion of a very simple form of solar disinfection (SODIS) of water. Contaminated water poured into an empty soda, bottled water or other P.E.T. bottle, and placed in sunlight for six or more hours will be purified by the ultraviolet rays and heat of sunlight. A thorough description of the project, and a comparative analysis with alternative household treatments is reported in Baffrey (2005).



and drums in which they store water. These containers take up large parts of their small houses. Women we talked to knew exactly how much water they had in their houses.

### ***Time, cost and quantities of water***

There is only one alternative to water vendors. There is one borehole in Kibera. It is at the Mosque on a high point. This provides the source of water that is available when all main sources are dry. This source came up in almost all conversations. We visited the Mosque on three occasions. Each time there were long lines of women with jerry cans waiting for water.

One single mother of four, who we will call Rahema, is a tailor who makes and repairs clothes for the community. She reports that on some weekends, and sometimes in August for a whole week, there is no water available. Then, Rahema goes to the Mosque to get water. At those times, it takes almost a whole day to get water and it costs K Sh 20 for four jerry cans. Those days she cannot do her tailoring. She gets 4 jerry cans of water, 80 liters or 21 gallons, for her family. Her rent is K Sh 700 and her water may cost K Sh 300 per month. When Rahema is able to fill four jerry cans, she brings home 16 liters/capita/day (lcd). This is less than the estimate of 25-50 lcd required for basic needs (United Nations 2003 World Water Development Report).

Rosala works 3 to 4 days a week as a hairdresser. She has a household of 8: her brother, five children, her bed-ridden mother and her self. Most of the family were home when the first author visited. Their room is small. The household uses 10 jerry cans of water a day. This is 25 liters/capita/day. Fortunately there is a water tap in her compound where she buys water when it is available. But Rosala only owns four jerry cans. The two bigger children help, but 'it is a struggle'. It takes 5 hours per day to collect water when there is a shortage. Water costs her, she says, K Sh 30-50 per day, at least K Sh 900 per month, almost as much as the rent for the room (K Sh 1000).

Martha cooks Mandazi, snacks people eat for breakfast, which she sells from a stall at the side of a road. She has a husband and 3 children. Her husband drives construction machinery. She uses 3 jerry cans of water on alternate days when she does not do laundry and ten when she does laundry. When there is water available, her landlord has a tap in the compound where the family have a small triangular room. When there is no water, as happened the weekend when we met, Martha had to get water from another part of Kibera. It took from morning till noon to get 3 jerry cans.

### ***Activities curtailed by water shortage***

A sequence of activities curtailed when water is short emerged from discussions with 14 women from Makina Women's Group. When water is scarce or unaffordable, clothes washing is postponed to another day. If water is more scarce, then bathing is foregone for that day. If there is even greater scarcity, then the household may have to cut back to one meal per day.

Here are eight summarized responses mostly from women of Makina Women's Group. We asked what they did if water was unavailable or they could not afford to buy enough:

*Use just for drinking. Some times only have water for drinking.*

*No daily washing of clothes. Skip showers. All family is forced to skip showers, we have only 1 jerry can.*

*Many things [I cannot do]: 1 clothes 2 cleaning home 3 bathing 4 kitchen garden.*

*1 clothes 2 utensils 3 cooking is rationed to one meal.*

*Same [as previous speaker] washing clothes, washing.*

*Business – mandazi and soup. At times not able to open her shop because she is spending so many hours looking for water.*

*Not washing utensils, stops tailoring.*

*When there's no water, do not do laundry.*

It is reported that 75% of Kibera residents bathe inside their living rooms (Water and Sanitation Program 1997).

### ***Household water storage***

The average water storage capacity of the households we asked was 200 liters (53 gallons), equivalent to 10 jerry cans. Two households had only three jerry cans, 60 liters. The maximum storage capacity was 460 liters. Households with the largest capacity could afford two or more 100 liter (26 gallon) 'super-drums'. One older woman had no water stored, two women had less than 20 liters. With an average household size of 7 people, the average storage capacity represents 29 liters/capita/day. The average of water actually stored when the women were interviewed around mid-day was 76 liters which represents 11 lcd, less than half of internationally estimated basic needs.

These interview responses provide more depth and detail filling out the bare average statistics of time, cost and quantities of water. They indicate that women are spending large parts of some days searching for water, significant proportions of their income buying water, and they have had to amass water storage. On some days, they face significant privation because water is unavailable or unaffordable. The dignity and well-being of their households and themselves is constrained by their inability to wash clothes or bathe. Their health is jeopardized when meals have to be reduced to one per day.

Water is scarce, costly and uncertain in Kibera for a number of reasons. In addition to the rationing of water, Brocklehurst et al (2005) note a long history of neglect by the utility, a lack of pumping capacity and a 'tendency to divert available water to neighboring high income areas where both political influence and revenue collection are greater' (Brocklehurst et al 2005: 5). These factors interact with illicit public-private partnerships

which reproduce scarcity, high cost and uncertainty because these conditions generate monetary benefits or social power.

#### 4. Existing public-private partnerships in a stateless location

‘...it may be necessary to change the nature of the existing public-private partnerships...In Kibera, there are situations where public officials and private operators work together to undermine the competitive nature of the private sector and the public accountability of the public sector’

(Katui-Katua and McGranahan 2003: 3)

There are a range of public-private partnerships, generally termed cartels in Kenya, found in informal settlements. When the Nairobi Water Company plans water supply proposals and when the Kenya Police engage in mass disconnections, parts of those institutions understand at least some aspects of these partnerships. Because the partnerships are illicit, serious discussion of their influence has been limited.

These partnerships have their origins in the exclusion of informal settlements from city and municipal influence. Thus, Katui-Katua and McGranahan write:

‘For almost 20 years after independence in 1963, the government policy was to demolish informal settlements. In pursuance of this policy, the Nairobi City Council Water and Sewerage Department was unwilling to provide basic services to informal settlements for fear of legitimizing them. From 1988, however, the government seemed to shift its position and has advocated upgrading of the settlements as part of its housing policy. Unfortunately this has not been carried through to practice.’

(Katui-Katua and McGranahan 2003: 11)

The unwillingness of the City Council to extend its services is only one consequence of this exclusion. Another is that markets, services, community and a constrained infrastructure grew up distanced from the influence of laws and the state. To this day, the Kenya Police do not regularly patrol Kibera.

Gang control of another, large informal settlement, Mathare, is an extreme example of the emergence of something like a parallel state. Until 2007, the Mungiki raised revenue from their control, backed by violence, of water and electricity services, the taxes, or protection money, they levied on minibuses and head taxes levied on residents (Wikipedia: Mungiki; *New York Times* 2007). Following Weber’s formulation that a state has a monopoly on the legitimate use of physical force within a given territory, we need only omit the word legitimate to get a rough description of the Mungiki control of Mathare until the mass disconnections of 2007.

Cartels and other partnerships arising from the exclusion of informal settlements range, as described in Table 2, from violent gangs with religious and tribal overtones, earning revenue through their control of services, through longstanding trader groups working

with government connections to restrict market activity, to more localized groups of traders exerting power over a particular set of water outlets.

**Table 2: Main types of informal public-private partnerships in water**

Type of cartel	Characteristics	Example	Relation to water system
Gang control of services	Broad, ambiguous aims of gang, flamboyant use of violence,	Mungiki in Mathare until August 2007.	Monopolized water and electricity, and various taxes, provide revenue
<i>[Strong cartel</i>	<i>Effective restriction on connections to pipelines</i>	<i>Possibly Kibera, prior to 2003-4. Evidence weak.</i>	<i>Effective control of water supply enabling higher prices]</i>
Weak, local cartels	Requires coordination between pipeline officials and traders	Contemporary Kibera – common. Brief cessation of water supply through blocking	Localized, transient monopolies boosting local trader share
Chamber cartel	Decides who gets connections to meter chamber	Contemporary Mukuru after construction of meter chamber model	Localized power realized through monopoly of connections at one chamber

Sources: First author’s discussions with traders, Nairobi Water Company officials, ex-officials, and observations of second author.

The strongest statement of a water cartel emerged from a journalist’s investigation of the sector in 2005: ‘They are a cartel of politicians, former Nairobi City Council employees and some consumers who are behind the current, and possibly years and years of water shortages and inflated bills in Nairobi.’ (Daily Nation 2005). This description was picked up by a Roskilde University, Denmark, masters project (Birongo and Le 2005) based on field work in Kibera. Neither the *Daily Nation* nor the subsequent masters project, however, provided convincing description and support for the idea of a strong cartel involving politicians. The cases the Daily Nation described related primarily to billing and meter reading irregularities. Birongo and Le’s (2005: 54) description would correspond with weaker local cartels. We describe contemporary examples of both meter reading and localized cartel practices below in section Six.

One large trader in Kibera described an 8 person cartel of ‘tycoons’ operating prior to 2003, who ‘did not want anyone else to connect’ to the water mains (Interview August 2008). This trader was able to get water connections by pleading with the engineers in charge and paying some money to them. This trader says that the cartel ended when its chairman died in 2003. In 2007, at the time of the mass disconnections described below, a

Kibera district officer, Keffah Marube named three cartels (Mungiki, Taliban and Jamshesh) in Mathare and four (the Saragombe, Silanga, Kibera and Lahini Saba groups) in Kibera (IRIN 2007). The evidence for this strong form of cartel is nonetheless, not strong in contemporary Kibera.

The partnerships for which we found present-day evidence are smaller scale and sometimes transient. In sections 6 and 7, we describe three types of partnership. In the first, small groups of local vendors arrange to have water supply turned on for the main to which they are connected and then turned off once their storage tanks are full. This gives them a localized monopoly on water. This we are calling a weak local cartel. Then, second, there are meter by-passes and billing irregularities which allow traders to reduce their payments to the water company. In section 7, we describe the third form of partnership in which influential local groups have monopolized the water company's new supply points in another settlement, Mukuru. Before sections 6 and 7, we describe the mass disconnections organized by the Kenya Police in 2007.

### **5. Mass disconnections and the Mungiki**

The Kenyan government has responded aggressively to the Mungiki and their control of water services. A series of actions in August and September 2007 by the Kenya Police led to mass disconnections, deaths and a possible decline in the power of the most well-known Nairobi gang, the Mungiki.

We asked a water company official if there was a connection between the Mungiki and water vendors:

Yes, to a big extent. Most [of the water vendors] belong to this cartel. [...] It was not easy to walk into Mathare when the Mungiki were in charge. Nairobi Water Company lost a lot of revenue and water.

Then this official went on to describe the start of the mass disconnections:

The Kenya Police called the Nairobi Water Company to a meeting, and told them to provide staff to do the disconnection. The police gave them security. The operation was already decided [when the water company was called to the meeting]. Police thought [the Mungiki] were empowered by selling water and electricity.

(Interview August 2008)

At the time of the disconnections, water company officials explained their actions to the press in these terms:

'So many people steal our water in this area. By cutting the water, we oblige people to report unauthorized connections. We started doing this in July 2007 in areas of the slum to identify illicit water points' (J. M. Ruhui, Engineer, NWC)

‘More than 90 percent of vendors [in Mathare] steal our water. They bribe plumbers or former employees of the company to get the water free....Sometimes our officials do not even dare penetrating the slums.’ (Edith Kamundi, sociologist, NWC)

(IRIN 2007)

The mass disconnections came at the end of a period, in summer 2007, when the police were responding to growing violence attributed to the Mungiki. Wikipedia (2008) summarizes international media accounts, including those of the *New York Times*, BBC and *Washington Post*, as follows:

In June 2007, Mungiki embarked upon a murderous campaign to instill fear by beheading matatu [minibus] drivers, conductors and mungiki defectors, drawing an armed response from Kenyan security forces, who stormed the Mathare area. Some 100 people died in the operation.

In subsequent months the police embarked on the operation to disconnect illegal connections in Mathare, Kibera and other settlements. This is how the same company official describes the operation:

It was a police operation to do away with the illegal cartels – all pipes and power were disconnected. Members of the Mungiki were flushed out of the village, some of them killed [others arrested].

[How did you distinguish illegal and legal connections?:]

[We] disconnected all indiscriminately. If [individuals] felt they were legally connected, they could make a case at the office and then the connection would be given back.

In the wake of this indiscriminate disconnection, Mathare was without water. After a week, fear of the outbreak of disease forced the water company to provide water. They decided to provide free water at standpipes in each of the main villages:

After mass disconnection, the village was a total mess. Toilets were stinking, people went back to using flying toilets. It was on the verge of an outbreak of disease. Nairobi Water Company decided to give free water – to avoid an outbreak, and because it is a basic human need. The settlement was just a week without water. The [disconnection] was politicized, it was close to the election [national election coming up in November], the area MP made a lot of noise - these people should be given water.

(Interview with company official August 2008)

The police, the water company and the electricity company got to Kibera in September. The negotiations between the vendors association, Maji Bora Kibera, and the water company had broken down earlier. But the coming of the police reinforced the setbacks

to that initiative in company-vendor dialogue. This is how the then Chairman of Maji Bora Kibera describes what happened:

Their new format was disconnecting everything. Mass destruction, mass disconnection. They did not check if a connection was legal or illegal. We have a meter and an agreement to pay accumulated bills, legalize. Here, they went to the main and disconnected pipes.

(Interview August 2008)

Before the mass disconnection, the chairman says, corruption had been reduced by the dialog between the *MBK* and the company and the attitudes of the company employees and of the vendors had changed. Since the mass disconnections, the relation between the two groups has become more distant: ‘they are not comfortable, not friendly [since they] came with the police, arresting, beating...’ (Interview with *MBK* Chairman August 2008).

In the next section, we describe two sorts of partnership. Localized cartels involved in selective water provision and meter by-passes have been going on for some years, and traders confirm that they are common in 2008.

## **6. Plumbers, meter readers and water vendors**

Plumbers and meter readers are the grass roots officials of the Nairobi Water Company. Plumbers make connections to the mains. Meter readers read meters. Just about everyone we talked to recognizes that these officials go beyond their job description.

One former company official who recently changed his job was able to describe these additional activities in considerable detail. We met in a small room in Kibera. Several other individuals involved in water trade were present. They confirmed the overall picture and occasionally added details. Three modes of operation were described.

*Selective water provision* involves a group of water vendors working with a company plumber to turn on, then turn off, one main pipe when others have no water. The former official described what happens as follows:

It starts with the vendors – they approach Nairobi Water Company and ask them to open the pipes. They open [the appropriate] valve. Once [the vendors’] tanks are filled, the vendors collect K Sh 1000 from the group. So they have K Sh 5000 to take to the employee. Then once the pipe is turned off, there is a shortage – vendors can cover their K Sh 5k expenditure [through increased sales because other vendors do not have water].

We asked how exactly the relationship between the vendors and the company is established. There is, of course, a procedure:

For the first time [this happens], they go to Nairobi Dam [the company’s nearest office to Kibera], talk to the receptionist, anyone. [That] person says they are not

concerned with this issue, but show them to the person who is concerned. The vendor group tells [this] person that they want water. He'll say he can't act without authority of his boss. To buy time, he will tell them the boss is not in. Then he runs in to talk to the boss. Then, it depends on the people – if they own tanks, standpipes, consumers. The company will know how to handle [these different groups]. People who have tanks formed a group and elected a chairman. Standpipes too. [To these water vendors], the company will say go talk to your chairman. Consumers are not organized, have no officials, company would not listen [to them]. Once the chairman is there [at the company], they will discuss how much [is to be paid].

What about other vendor groups wanting water?:

Once the Company has sorted [the first] group and water is flowing to their village. Other people will ask why. They are on the same pipe but not getting water. They will look for [their] chairman, organize another bribe, present a case, maybe the chairman will decide [to go to the company]. Another bribe. Depends how aggressive and connected the chairman is. He may go and be turned away.

In other words, *de facto* company procedure is that this arrangement should be organized through the village chairman. This is the chairman sponsored by the company and possibly elected by vendors who represents the vendors to the company. The way the official describes this procedure makes clear that once the relationship is established, selective water provision can be arranged more easily on subsequent occasions.

One of the water vendors we talked to complained about a localized cartel the day we talked to him in August 2008. A group with influence on a distant manhole had turned the tap so there was no flow to his side of the village. 'They expect people from this side [of the village] will buy water from them.' How often does this happen?: 'Daily. It is a joint thing by this group and maybe a company official. Both #10 and #6 pipes are affected.' We asked another water vendor a few days later, why some vendors were able to provide water that day: 'Some [water vendors] have coordinated with juniors [officials of the company] to come at night to open the water'.

Collignon (2008), co-author of a ten-country study (Collignon and Vezina 2000) of small water and sanitation providers in Africa, notes that in general 'utility staffers charged with opening valves and distributing water are in a very sensitive position, and find themselves with very good opportunities to pad their incomes illicitly.' (Collignon 2008: 53)

A series of other procedures were described by the former company official. A *meter bypass*, involves adding an underground pipe to circumvent a meter. The beneficiary vendor is told that he must use the meter for some of his water (1-2 tanks out of 5), so that the existence of the bypass is not obvious from very low meter readings. If the by-pass is discovered by a friendly meter reader, he can be told that this is an investment for the plumber's old age. If, however, a new employee, not yet aware of grass roots company



practice, discovers the by-pass, then the plumber denies all knowledge and refuses to accept responsibility.

*Adjusting meter readings* is facilitated by the company's purchase of two different types of meter. One, the Kent, comes from UK and is hard to adjust. The other, made in China, 'moves in both directions and even air can move it. The company supplies both types of meter despite knowing that the Chinese meters are faulty.'

The former company official also described how the large water bills of water vendors may be redistributed to other consumers with the assistance of office staff, and how money changes hands for the making of connections to the main pipes.

We asked how high this linkage between vendors and the company goes. The official responded that 'the people who sign the forms' have to benefit from the process. But he does not know if it goes higher in the company.

In Section Seven, we describe the experience with three experiments in providing water to informal settlements. The account is based largely on the careful and thoughtful recollections of a senior water company official, Mildred Ogendero, in charge of its informal settlements and environmental departments, and of a second company official closely involved in these experiments who wishes to remain anonymous.

## **7 Experiments in water and social engineering**

There have been three recent rounds of innovation in water supply to informal settlements. Two have been concluded. The third is just starting. The first is the experiment in building a water vendors association. We have described the rise of *Maji Bora Kibera*. We have now to describe the waning of this approach. The second is the Mukuru 'chamber model' building on experience from an informal settlement in Kisumu, western Kenya. As the company admits, this experiment, now termed a pilot project, was not a great success. It generated a new form of cartel, the chamber cartel. The third experiment, the delegated model in Mathare, seeks to learn from the outcome of the Mukuru experiment and takes the story on from the mass disconnections described in Section 5. After a year of planning and consultation, construction is due to start in Mathare late in 2008.

These experiments have been facilitated by decisions of the Nairobi Water and Sewerage Company to plan water provision in informal settlements separately from the rest of Nairobi, and that social considerations not revenue should guide policy in those areas. The company has a team of three sociologists designing these initiatives, along with engineers.

### ***The decline of Maji Bora Kibera***

A great deal of work went into the Kibera water vendors association, *Maji Bora Kibera* (MBK). Some traders have fond memories of Shagun Mehrotra, the World Bank/UNDP Water and Sanitation Program officer who spent a lot of time through several years with

them, learning about the intricacies of the water system and explaining to the water vendors how the new water company would work, and why they needed to pay their bills. Many meetings were organized in 2003-04. If the *MBK* chairman, and the published account based on Mehrotra's research (Brocklehurst, Mehrotra and Morell 2005), are to be believed, then considerable progress had been made.

In 2008, *MBK* appeared to be in decline with no meetings planned and no dialogue with the water company. As we note below, the water company is now unsure how to proceed in Kibera.

This experiment set out to establish an association of vendors which would enable them to 'act in unison and thereby promote self-regulation, improve their credibility and develop relations with the utility.' (Brocklehurst et al 2005:2). This, it was expected, would 'result in a better business environment for the providers, less leakage for the utility, and, most importantly, greater accountability to customers - all important steps in developing better water services for the poor' (Brocklehurst et al 2005:2).

What happened? First, the agreements *MBK* thought they had negotiated with the company to legalize illicit connections and resolve outstanding bills did not hold. At a trial implementation in the Kibera village of Soweto around April 2007, the company started disconnecting all connections and the *MBK* chairman withdrew in anger. Then, second, a few months later, the Kenya Police rode roughshod over whatever the company may have intended. For the time being at least, this first experiment ended with the mass disconnections.

### *Mukuru Chamber Model*

In Mukuru we looked at it as an engineering problem. We thought putting in infrastructure would solve the problem, that people would automatically make connections to the chambers.

(Mildred Ogendero, Interview, August 12 2008)

The second experiment was the meter chamber model, pioneered in the Kisumu settlement of Nyalenda, then implemented in Mukuru, an informal settlement in Nairobi. The meter chamber model is quite simple. A network of new water pipes is laid around the settlement, then spur pipes lead into the settlement to banks of water meters in a 'chamber' (a large concrete box, perhaps 5m by 2m, locked to prevent tampering). The plan is for vendors and community groups to take control of one or more meters and make pipe connections to where the water is required.

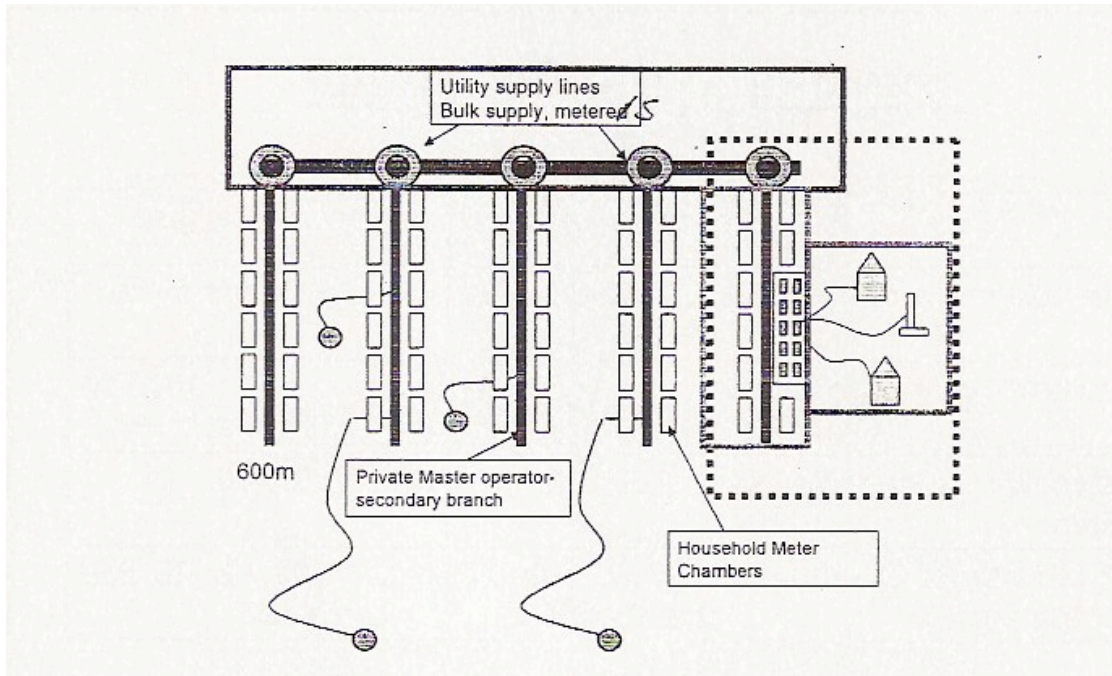


FIGURE 2: THE METER CHAMBER MODEL - DYALENDA  
SOURCE: KISUMU WATER AND SEWERAGE COMPANY.

This model was implemented in Mukuru with the construction of 67 chambers with 25 or more connections to each. But when the company made a recent ‘socio-economic appraisal’ of what had happened, they found, ‘the cartels had outsmarted us. We hoped the community would make the connections, but it was the cartels.’ (Ogendo, 8/12/08)

The appraisal involved organizing a meeting of all the account holders for each of 16 chambers. When the company expected 26 account holders, only 10 would come. Each person held 2-4 connections, some also held connections in the name of relatives. The company determined that the more influential people in the community were appropriating most of the connections. What was so bad about that? ‘When the company charges K Sh 3,500, the cartel [is] re-selling at K Sh 20,000.’ (Ogendo, 8/12/08).

Mildred Ogendo explained further the powers that accrue to the chairman the company had arranged to oversee the connections:

When we went to ask [communities in Mukuru] to form groups, there was a lot of infighting. Everyone wants to do the talking to [the company]. We wanted a chairman for each chamber, we brought together groups and elected a chairman and secretary. We deal with the chairman for communication with the group using a chamber.

[Does the chairman have a lot of power?:] Yes a lot. Mukuru has its own economic dynamic which we are not yet able to fully understand. Water is the economic base, the chairman has the authority to decide the number of people he wants to have connections. We are trying to [clean] it up. He knows who he wants

to work with. [The company] entrusted him with power ... We tried to empower the community, but [we] allowed [them] to elect leaders.

Ogendo says: 'We wanted to learn from it. We did learn. When we go to another informal settlement' it will be different. The next settlement to be tackled is Mathare.

### ***Delegated model in Mathare - learning from Mukuru***

We want to start a perfected project in Mathare. We are cautious. We have been planning for a year. Still ...worried about the issues, so re-planning.

Now the company is taking on Mathare. This, remember, is the community where the Kenya Police fought battles with the Mungiki in 2007. For the year after the mass disconnections water has been supplied free to a limited number of standpipes for each village in Mathare. The company has turned a blind eye to a number of unplanned connections in the more remote areas of each village.

Rather than undertaking the task of social engineering itself, the company has delegated this work to a non-government organization, the Pamoja Trust. This group had previously worked on upgrading housing in Mathare. They arranged community mapping and enumeration. Different technical designs have been presented to community meetings. Some have been rejected and alternatives created. New forms of subcontracting of community-supported water sellers are envisaged at the bulk meter and at the chamber. Some individual, household connections are envisaged for the large buildings constructed by landlords in Mathare. The new model is expected to 'break the power of the vendors' because the community will be involved in deciding who the sub-contractors will be and what the price of water will be (Interview with anonymous official August 2008).

The company thought that the new design was done, and they were planning to go ahead with implementation in four of the fifteen Mathare villages. Then, the Kenya Water Trust Fund (a government investment agency) got involved and made suggestions. Now, the model has been expanded in two directions. The kiosks are now intended to be multi-function kiosks, selling a range of goods as well as water. And, the installation of pipes will be used as an opportunity to improve drainage, that is replace open sewers, in Mathare. Now, the experiment waits for funding from the World Bank/UNDP Water and Sanitation Program.

### **Conclusion: hybrid company and emergent institutions**

Water is costing households in Kibera nearly as much as the rent. Sometimes, families are reduced to one meal a day because the cost of water is high. Many women regularly postpone doing the laundry because water is scarce or too costly. Some women have to postpone their businesses because water has become scarce and several hours is required to obtain minimal water. Water is so uncertain that many, probably the overwhelming majority, store numerous jerry cans and other containers in their homes.

Why is water scarce, costly and uncertain in Kibera? Water is sometimes scarce in Nairobi as a whole, though less costly and uncertain. Kibera and other informal settlements suffer their particular privations because they have been excluded and threatened with demolition for decades. These conditions have fostered the growth of unprepossessing forms of public private partnership and merchant compacts. The combination of city-wide rationing, spatial discrimination and locally-fabricated scarcities and uncertainties generates a debilitating deprivation expressed in child mortality differentials.

The task of creating infrastructure and institutions able to address water scarcity is substantial. The water company has embarked upon a process of social and technical engineering which amounts to building foundations for municipal institutions and extending several levels of government (see also Ferguson, 1990). Engineers are working with sociologists and non-government organizations to 'empower' communities and build infrastructure. Whether these experiments can succeed in the shadow of police action against indigenous state-like entities and faced with the creativity of influential local merchants remains to be seen.

These stories speak to the current direction of local institutional innovation and deliberative development as the most promising areas for economic and social development (Rodrik 2002, Evans 2004). The delegated model being painstakingly developed for Mathare by the Nairobi Water Company and the Pamoja Trust is an example of deliberative democracy being used to generate innovative institutions. Similarly, the building of Maji Bora Kibera can be seen as participatory democracy. The difficult task of building institutions with local legitimacy can also be seen as a way of coordinating existing institutions with more formal government structures. The gains made in the construction of Maji Bora Kibera appear to have been halted by miscommunication between the association and the company and then swept away by the Kenya Police mass disconnections. These gains seem worthy of resurrection under the legitimate title of innovative institution building through deliberative development.

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