



# Exploring the challenges and opportunities for master operators and water kiosks under Delegated Management Model (DMM): A study in Lake Victoria region, Kenya



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## ABSTRACT

The urban poor in developing nations lack access to basic services, including access to clean water. Utility–community partnerships, for instance, the Delegated Management Model (DMM) in which a utility delegates management of infrastructure and service delivery to slum communities, are often promoted as a viable solution to accelerate slum community access to water services. However, little empirical research has been done to evaluate the benefits and challenges of such models. This study compared water services using the Institutional Analysis and Development (IAD) Framework in three slums in Kisumu city, Kenya: two where DMM has been implemented, and one where it has not. Results showed that DMM had slightly lowered water costs for slum dwellers, and improved revenue collection from the operators. However, despite these benefits, access to water had not significantly improved; unreliability of services was a problem. Implementing DMM in crowded settlements inadvertently resulted in service network that was prone to unintentional damage. Unreliability of services was caused by frequent pipe bursts often due to unintentional sources, for instance, pipe breakage by vehicles, poor maintenance, and vandalism. Weak and uncoordinated institutional arrangements affected the effectiveness of operators' efforts to curb these system disruptions, thus exacerbating sub-optimal service delivery. Moreover, the unreliability of services in DMM serviced settlements can exacerbate the health problems that the urban poor face due to the very poor water quality of sources that residents use during periods of system outages. External support is needed to hasten the development of practical solutions that fit the social and geophysical character of individual slum communities in order to improve service reliability.

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## 1. Introduction

Approximately one-third of the urban population in developing nations lives in informal settlements (UN-Habitat, 2013). Sub-Saharan Africa has the fastest growing urban population in the world (UN-Habitat, 2010), and nearly 70% of urban residents live in informal settlements – the highest percentage in the world (UN-Habitat, 2013). Governments in the region have limited capacity to expand essential services rapidly enough to keep pace with urban population growth. This is especially true in informal settlements, where water-service provision by state utilities is inadequate and/or unreliable and residents depend largely on independent service providers. Independent providers are usually entrepreneurs who live in the settlement and operate without authorization by, or support from, the municipality (Lundqvist, Appasamy, & Nellyyat, 2003). While the cost and quality of water

provided by these independent operators have been criticized (Lundqvist et al., 2003; Solo, 1999; UN-Habitat, 2006; UNDP, 2011), it is widely acknowledged that the providers play an important role in distributing water to areas and groups of people outside the reach of the utility system (Lundqvist et al., 2003; Solo, 1999). Informal providers range from those who use, for example, wheelbarrows, bicycles, animal carts, motorbikes, or trucks, to supply water to those who establish and operate small piped networks (Solo, 1999; UNDP, 2011).

Since 2000, domestic governments and international donors have encouraged utilities to develop partnerships with independent providers to improve their service (Lundqvist et al., 2003; Njiru, 2004; Oosterveer, 2009; WSP, 2009). One kind of partnership is the Delegated Management Model (DMM), in which a utility delegates management of infrastructure and service delivery to slum residents. In this study, DMM is conceptualized as a model of *self-governance* in which actors seek to overcome the collective-action problems associated with management of infrastructure for water

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distribution in urban slums. In this arrangement, the utility delivers water in bulk to master operators, who then distribute water through individual piped networks or standpipes (hereafter referred to as water kiosks) managed by individuals from the slums. DMM was expected to reduce unaccounted-for water (a utility loss); improve access to safe water, and provide new opportunities for slum dwellers to earn income. The objectives of this study were to: (1) evaluate how operators have benefitted from DMM, and (2) identify the challenges Kisumu has faced in implementing DMM and how those challenges constrain benefits to master and kiosk operators. There are two groups of beneficiaries in slums with DMM. One group consists of people who buy water, and the other of people who sell water—master-operators and kiosk operators. This paper discusses results of interviews with master-operators and kiosk operators who are implementing the DMM.

Utilities face serious challenges in supplying water in the slums, and proponents of DMM claim that the model is a better institutional arrangement than direct service from a utility (WSP, 2009). Proponents expect improved performance of DMM because it deals with the challenges that utilities face in providing service to slum communities and it also provides benefits to slum dwellers that a direct utility supply would not, such as new income-earning opportunities and more affordable water (WSP, 2009). This paper presents and interprets the empirical data the author collected about DMM benefits to small-scale water service providers, and compares those benefits to the experiences of informal water providers in a nearby slum without DMM. The results of this study contribute to the discussion about ways to move forward in providing more efficient and effective water service delivery to the urban poor living in informal settlements.

### 1.1. Constraints to water-service provision in the slums

Informal urban settlements vary in size and structure, but typically take one of the following three forms: large-scale and concentrated, scattered pockets, or illegal subdivisions (UN-Habitat, 2003). All forms have some attributes in common: poverty, social exclusion, insecure land tenure, little or no access to basic services (water, sanitation, waste collection, electricity), overcrowding and high density, unhealthy living conditions, and hazardous locations (UN-Habitat, 2003).

Institutional constraints limit service improvement in informal urban settlements (Bakker, Kooy, Shofiani, & Martijn, 2008; Rondinelli, 1991; Solo, Joyce, & Perez, 1993). Most developing countries have a history of inefficient and ineffective water governance (Solo et al., 1993). In many cases, the state has been both the manager of water resources and the supplier of water services (Rondinelli, 1991). This has made it possible for water development to be politicized, and for the political class to engage in rent seeking and manipulative tactics, all of which interfere with efficient extension of water coverage. It was mainly public utilities local authorities that accelerated coverage, with public-health institutions supporting investments (Hunter, MacDonald, & Carter, 2010). Most low-income nations, although the public-health sector benefits from improved water-service provision, utilities alone bear the costs of providing water (Hunter et al., 2010). Individual and small-scale private water suppliers (Solo, 1999) have found ways to overcome some of the challenges that are inherent in providing water in informal settlements, and even thrived by providing services to slum dwellers (Solo, 1999). These suppliers are unregulated and thus can be more flexible than a utility, for example by practicing price discrimination and charging for water according to water source, distance to market, quantity supplied, and customer characteristics (Lundqvist et al., 2003; Solo, 1999). They employ diverse delivery technologies and so are able to service even the most difficult terrain (Solo et al., 1993).

While utilities collect payments on a fixed schedule, individual suppliers usually reside in the same neighborhoods as their clients and can negotiate different payment arrangements with different clients, as well as follow up with defaulters (Solo, 1999). Because most suppliers are in constant touch with customers, they know customer habits and needs and can diversify to provide other services (e.g., products for treating and storing water, toilets for pay, fuel wood). Strong competition for customers among these providers often improves the quality of services (Solo, 1999). A small-scale provider's business can meet new demand quickly because it does not depend on infrastructure; some providers even supply water to formal settlements during water shortages (Solo, 1999). Small-scale providers tend to be innovative in introducing new technologies, marketing their services, and coming up with new ways to deliver services (Lundqvist et al., 2003; Solo, 1999).

Utilities complain that some small-scale providers steal utility water and damage infrastructure (WSP, 2009). Water companies in towns and cities all over Sub-Saharan Africa report losses of over 70% of potential revenues in the form of “unaccounted for water” (Keener, Luengo, & Banerjee, 2010). Most of this revenue is lost through fracture of truck mains. However, some individual water providers desperate to meet demand siphon water from utility lines, and utilities also lose revenue from illegal connections (Solo, 1999; WSP, 2009). KIWASCO, the water utility in Kisumu, was reported to have realized no revenue from 70% of the water that went through its system in 2003, with a large proportion of that loss due to water siphoning and illegal connections (Kayaga & Smout, 2007). To reduce losses from “unaccounted for” water, donors and government agencies have encouraged partnerships between utilities and informal service providers (WSP, 2009). In the Delegated Management Model of partnership, the utility delegates management of infrastructure and service delivery to slum residents. This ensures that small-scale providers share the burden of revenue collection and network maintenance. It is assumed that small-scale providers will be motivated to take measures to deter illegal piped connections, water theft, and vandalism of infrastructure. Thus, the arrangement is expected to improve revenue collection and service quality, to lower the cost of water, and to provide jobs (WSP, 2009).

### 1.2. Implementing the Delegated Management Model in Kisumu city, Kenya

Urban water service in Kenya is the responsibility of water-service providers (WSPs) appointed and licensed by the Water Services and Regulatory Board (WASREB) (GoK, 2002). WSPs may be community groups, non-governmental organizations (NGOs), autonomous entities established by local authorities, or individuals (GoK, 2002). The Kenya Water Act 2002 established the legal framework for commercialization of urban water services and the development and management of those services (GoK, 2002). The Act has enabled local authorities to form municipal water companies, which are required to operate profitably, efficiently, and to be financially sustainable.

In formal urban settlements, water users simply pay a tariff to a utility, but in the slums served by the DMM, residents are expected to play a major part in the operation, maintenance, and management of water extensions. In Kisumu's DMM, KIWASCO delivers water in bulk to metered master-operators (either group-operators or individuals) who pay KIWASCO for the water they sell each month. The master-operators are responsible for selling water to consumers, either through piped connections to dwellings or through a network of water kiosks and standpipes for those too poor to afford private connections. Thus, DMM introduces significant *institutional changes* in service provision, with new “actors”—e.g., master operators and kiosk operators—all drawn from the slums (Fig. 1).

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