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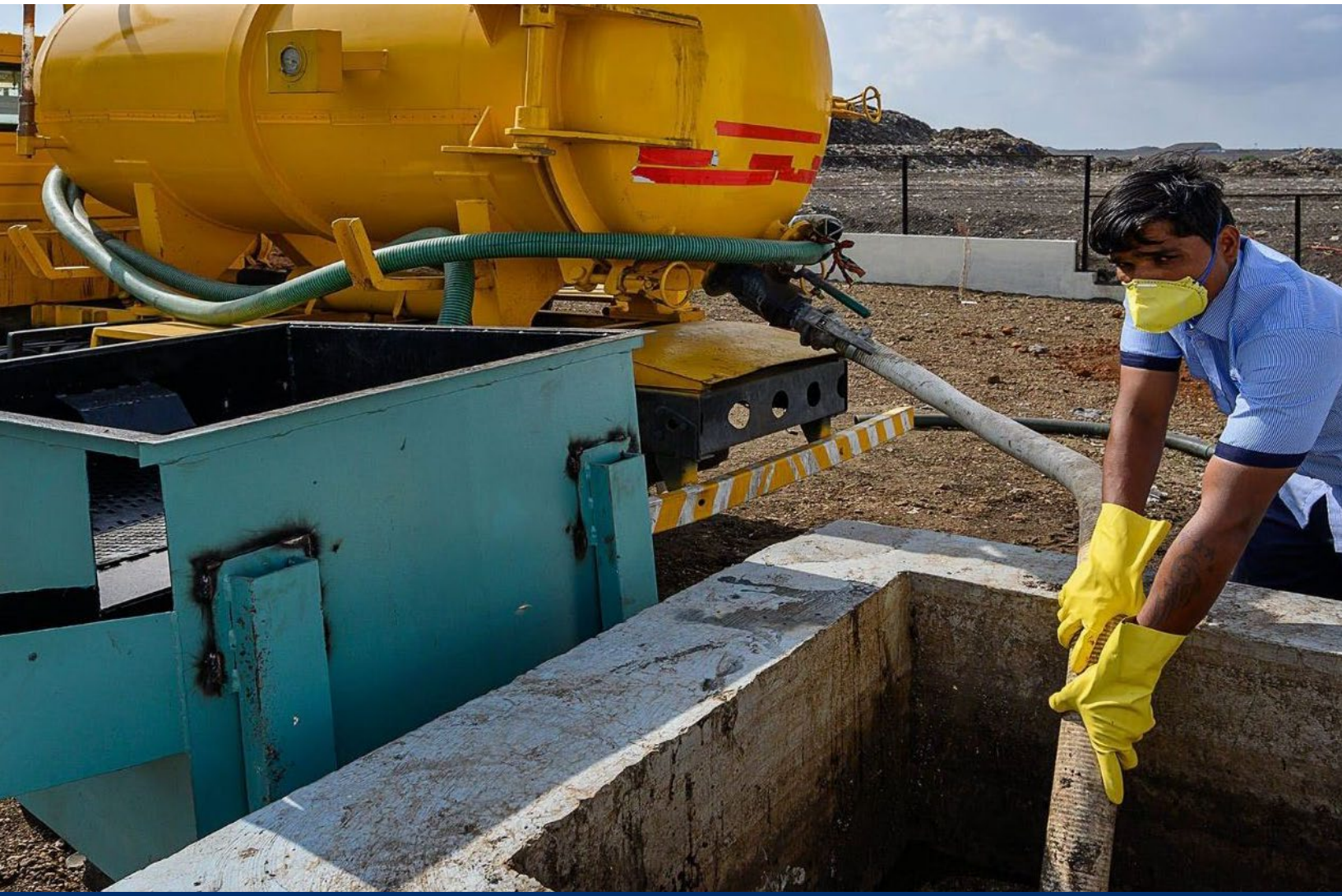
BUILDING INCLUSIVE AND RESILIENT CITYWIDE WATER & SANITATION SERVICES

An evidence-based review of the role of small local service providers (SLPs)



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Authors: Rishi Agarwal, Abhishek Khanna, Meher Abrao, and Niharika Mukerji

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Tetra Tech Contacts:

Liz Jordan, Chief of Party
liz.jordan@tetratech.com

Miriam Otoo, Deputy Chief of Party
miriam.otoo@tetratech.com

Zach Borrenpohl, Project Manager
Zach.Borrenpohl@tetratech.com

Tetra Tech
1320 N. Courthouse Road, Suite 600, Arlington VA 22201
Tel: (703) 387-2100, Fax: (703) 414-5593
www.tetratech.com/intdev

Cover photo: FSM truck operator desludging a septic tank in Sinnar, India, 2019, under the scheduled desludging model. Image courtesy of Center for Water and Sanitation, CEPT Research and Development Foundation, Centre for Environmental Planning and Technology University.

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ACRONYMS

ADB	Asian Development Bank
ADRM	*Aguas da Região de Maputo*
AfDB	African Development Bank
AFORAMO	*Associação de Fornecedores de Água de Moçambique*
AIAS	*Administracao de Infraestruturas de Agua e Saneamento*
AURA	*Autoridade Reguladora de Água*
BMGF	Bill and Melinda Gates Foundation
CBO	Community-Based Organization
CDC	Community Development Committee
CEPT	Centre for Environmental Planning and Technology
CWIS	Citywide Inclusive Sanitation
DMM	Delegated Management Model
DNAAS	*Direcção Nacional de Abastecimento de Água e Saneamento*
FCDO	Foreign, Commonwealth, and Development Office (UK)
FIPAG	*Fundo de Investimento e Património do Abastecimento de Água*
FPA	*Fornecedores Privados de Água*
FSM	Fecal Sludge Management
GIS	Geographic Information System
GIZ	German International Development Agency (*Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH*)
ILO	International Labor Organization
JMP	Joint Monitoring Programme
KCC	Khulna City Corporation
KCCA	Kampala Capital City Authority
KFSM	Kampala Fecal Sludge Management Project
KII	Key Informant Interview
KIWASCO	Kisumu Water and Sanitation Company Limited
KPI	Key Performance Indicator
LIA	Low-Income Area
LMIC	Low- and Middle-Income Country
LSP	Lusaka Sanitation Program
LWSC	Lusaka Water Supply and Sanitation Company
MoU	Memorandum of Understanding
MWSS-RO	Metropolitan Waterworks and Sewerage System Regulatory Office
NEMA	National Environment Management Authority
NIPORT	National Institute of Population Research and Training
NIPS	National Institute of Population Studies
NRW	Non-Revenue Water
NWASCO	National Water Supply and Sanitation Council
NWSC	National Water and Sewerage Corporation

ONAS	*Office National de l'Assainissement du Senegal*
PWP	Private Water Provider
SLA	Service-Level Agreement
SLP	Small Local Provider
SMC	Sinnar Municipal Council
SNV	*Stichting Nederlandse Vrijwilligers*
SPEED+	Supporting the Policy Environment for Economic Development
SUWASA	Sustainable Water and Sanitation in Africa
TPSB	*Tubig Para Sa Barangay*
ULB	Urban Local Body
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UPPR	Urban Partnerships for Poverty Reduction
URBAN WASH	Urban Resilience by Building and Applying New Evidence in WASH
USAID	United States Agency for International Development
USD	United States Dollars
VTO	Vacuum Truck Operator
WASH	Water, Sanitation, and Hygiene
WASH-FIN	USAID Water, Sanitation, and Hygiene Finance Program
WASREB	Water Services Regulatory Board
WFP	Water for People
WHO	World Health Organization
WRM	Water Resources Management
WSP	Water and Sanitation Program
WSUP	Water and Sanitation for the Urban Poor
ZEMA	Zambia Environmental Management Agency

PREFACE

The Urban Resilience by Building and Applying New Evidence in WASH (URBAN WASH) program is a centrally funded activity of the United States Agency for International Development (USAID) Bureau for Resilience and Food Security. It is a global, five-year (2021–2026) research and learning program implemented by Tetra Tech in collaboration with Aquaya Institute, FSG, Iris Group, SEGURA Consulting LLC, the Stockholm Environment Institute, and WaterAid. It is led by a team of experienced researchers and urban water, sanitation, and hygiene (WASH) experts and supported by an external Advisory Board composed of WASH and urban resilience innovators and thought leaders.

The goal of the program is to promote impactful, sustainable, equitable, and climate-resilient WASH and water resources management (WRM) policy and programming in urban and peri-urban areas through strengthening evidence-based decision-making of partners and host governments at the local, regional, state, and national levels. To achieve this objective, URBAN WASH will perform tasks and complete deliverables under the following three interrelated components:

1. Component 1: Establish and support strategic engagement and partnerships to ensure local and broader relevance of research and use of evidence.
2. Component 2: Generate high-quality evidence through implementation research to increase the sector's understanding in three main areas:
    a. Enabling environment (i.e., viable urban WASH and WRM policies and regulations, and institutional arrangements) for improved drinking water quality and citywide sanitation;
    b. Approaches for sustainable small and informal service provision; and
    c. Sustainable approaches to improve source water protection and diversification for resilient water supplies.
3. Component 3: Provide on-demand technical assistance to USAID missions and technical bureaus to support urban WASH and WRM programming, including research, evaluations, and assessments.

Among the first activities of URBAN WASH is the production and dissemination of in-depth desk reviews focusing on the enabling environment for improved water and sanitation provision, role of small players in service provision, and source water protection and diversification.

EXECUTIVE SUMMARY

Across low-and middle-income countries (LMICs), the public institutions mandated to provide water and sanitation services in cities—termed in this study as urban local bodies (ULBs)—have limited financial capacity and/or capabilities to provide citywide coverage. The population in unregulated areas, often informal, peri-urban, or low-income settlements, are typically covered, informally, by small local providers (SLPs), who are often not officially recognized or regulated.

This study is based on literature review and case studies to understand approaches for cities to formally leverage SLPs for delivering drinking water and fecal sludge management (FSM) services to households in LMIC contexts. Across cases from four cities/regions in Sub-Saharan Africa and three cities in Asia, the study considered the effects of these approaches on equitable access and adaptability of urban service delivery systems to future shocks.

Key Findings from the Literature Review

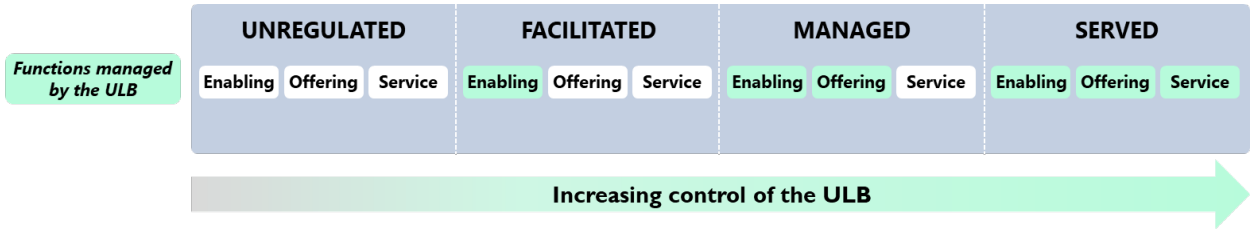
SLPs have been prevalent for several decades in LMICs and fill critical service gaps. They primarily serve lower-income households, but can also serve other income segments. Customers in some contexts prefer SLPs' services, perceiving them as reliable and accessible, as services may be tailored to their needs. However, their services are often characterized by low safety, such as inadequate treatment of water or unsafe collection and disposal for FSM. SLP services are less affordable than utility-led services due to the subsidized nature of utility services, potentially high service delivery and "informality" costs faced by SLPs, and practices of discriminatory or exploitative pricing.

There are several challenges to leveraging SLPs formally. SLPs can face barriers to accessing formalization and capacity-building initiatives (despite needing and valuing them), and formal financing. Many SLP owners and staff are from marginalized groups, such as women and manual emptiers, for whom these barriers are exacerbated.

Different areas of a city can fall under four archetypes based on how the ULB engages with SLPs. In ***unregulated*** areas, ULBs do not manage any functions or have oversight of SLPs. However, ULBs can formally leverage SLPs by recognizing them and ***facilitating*** their participation by taking on enabling functions like licensing SLPs or setting up treatment facilities. ULBs can also ***manage*** the market through actively influencing SLPs' core product and marketing functions in addition to enabling functions (e.g., through delegated management models (DMMs) or performance-based contracts).

Transitions to facilitated or managed markets allow ULBs to expand coverage to areas they cannot ***serve*** directly through their own piped or decentralized services (see ES 1).

ES 1: Market archetypes within a city



Conclusions from the Case Studies

The case studies showed that several enabling factors drove market transitions, including political directives, economic incentives, and social conditions. Mandates from regulatory bodies to achieve coverage led ULBs to consider alternative approaches to expand services. Economic factors incentivized ULBs to share the financial burden of delivering services with SLPs. Social conditions, such as disease outbreaks and low affordability for customers, also played a role in motivating action.

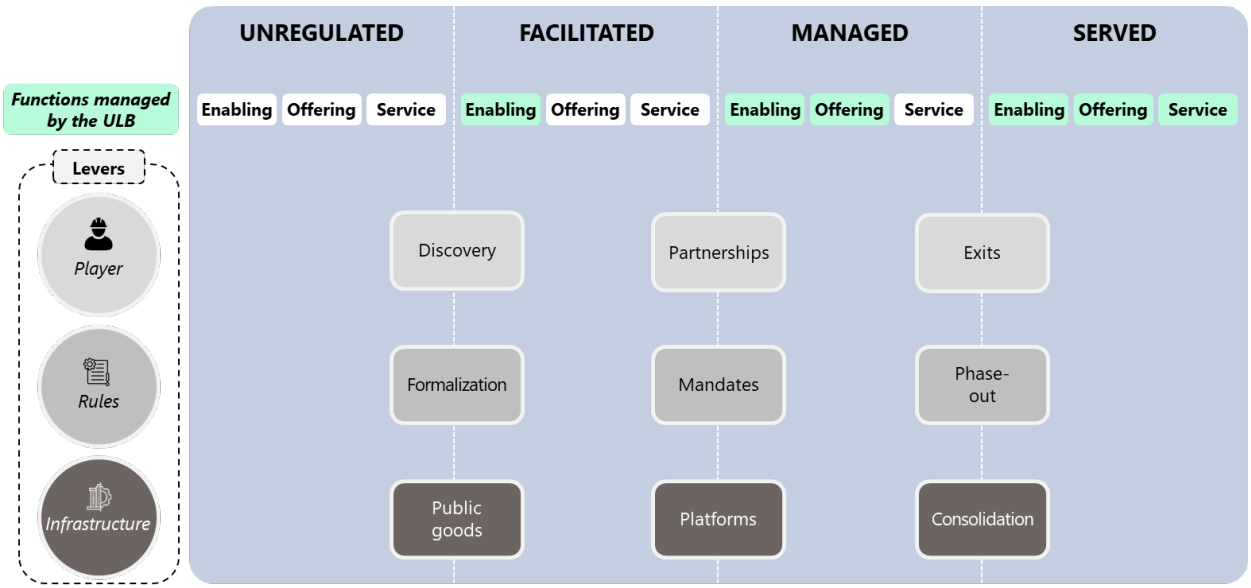
Transitions required building mutual trust between the ULBs and SLPs. In some cases, SLPs were initially averse to engaging with ULBs, whereas in other cases, ULBs had conflicts with SLPs. Buy-in and involvement from multiple governmental and nongovernmental stakeholders were required to create a favorable enabling environment for formally integrating SLPs into citywide services. Nongovernmental stakeholders included local entities (such as SLP collectives and community organizations) and international development organizations (such as donors and implementing programs).

ULBs and other stakeholders implemented transitions using three types of actions or "levers":

- Managing the engagement with ***players*** (e.g., engaging with SLP collectives, designing partnership agreements),
- Establishing ***rules*** for the engagement (e.g., issuing licenses, defining prices), and/or
- Creating ***infrastructure*** to support SLPs to deliver services (e.g., developing treatment facilities or marketing platforms).

The purpose of these levers varied by transition. For example, for transitions to facilitated markets, the focus of the player lever was the ***discovery*** of many unregulated players and providing them with capacity-building support. For transitions to managed markets, the focus of the player lever was designing ***partnership*** modalities that allowed greater control over the services of a select number of SLPs. The use of these levers to implement transitions is represented in the Market Transitions Framework (see ES 2).

ES 2: Framework for implementing market transitions



The sequencing of transitions varied across the case studies. For example, in Kampala, some markets first transitioned from unregulated to facilitated and then from facilitated to managed. In Kisumu and Manila, markets transitioned directly from unregulated to managed.

Implementing market transitions allowed ULBs to positively influence several market outcomes. Transitions led to a significant expansion in the coverage of formal services, especially in areas with low-income and marginalized populations who would otherwise remain unserved by ULBs. Customer service and reliability also improved, with ULBs getting more directly involved in service provision and interacting with customers to document their concerns and feedback. Affordability improved, especially in managed markets, as ULBs could control and reduce SLP prices relative to unregulated markets. However, there were several implementation challenges:

- Implementation of transitions took several years and was done incrementally. Transitions to managed markets began with pilots for a few years, followed by a scale-up period.
- Compliance with safety standards, such as paying for treatment and testing of water or incurring transport and/or disposal fees for safe disposal, increased the cost burden for SLPs.
- Equitable pricing was a challenge due to the need to balance the ability of low-income and marginalized households to pay, viability of SLPs, and the need to cover the full cost of services.
- SLPs from marginalized groups faced barriers to benefiting from transitions, sometimes facing a risk of losing their business.

Areas for Further Research

The knowledge base on the topic of leveraging SLPs is still nascent, with limited examples and documentation of ULBs formally leveraging SLPs to deliver services. The case studies reflect a positivity bias. As such, there is limited generalizability on the enabling factors for ULBs to leverage SLPs. The case studies also revealed evidence gaps on using different levers to implement transitions. Finally, there was insufficient data on the impact of transitions on service delivery outcomes, especially on marginalized households and SLPs, and on resilience for the urban service delivery system. Additional research, motivated by the following questions, can help stakeholders implement transitions and leverage SLPs for delivering water and FSM services:

- Choice of transitions: What choices do ULBs make to implement transitions with SLPs, and what conditions influence these choices?
- Implementation of transitions: How can ULBs use the identified levers to successfully implement different transitions with SLPs?
- Impact of transitions: What is the impact of these transitions on service delivery outcomes, marginalized groups, and resilience?

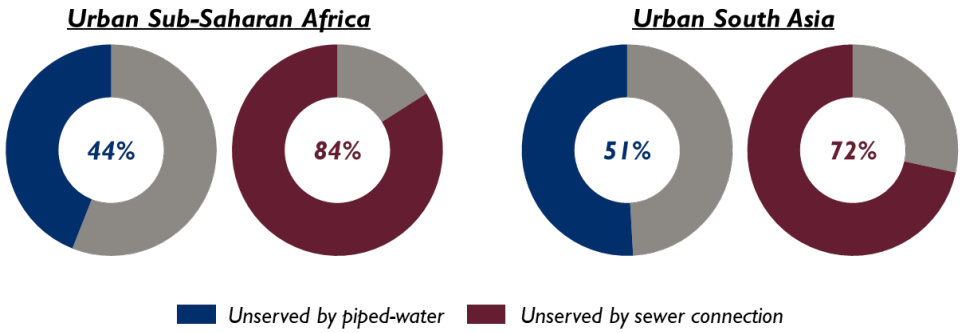
Understanding the choice of transitions requires an in-depth comparative analysis of the drivers and barriers of different transitions. Drivers and barriers can include the social, political, and economic incentives or challenges for leveraging SLPs; characteristics of the areas being transitioned; the viability of transitions for ULBs and the broader market; and the impact of these factors on the sequencing and end-goal of transitions. Research on the implementation of transitions can provide evidence on the benefits and challenges of implementing different levers, the costs borne by the ULBs during implementation, and the efficacy of different levers in improving service delivery. Finally, more evidence is needed on the impact of transitions on the affordability, coverage, and quality of services for households (especially those from marginalized groups); on marginalized SLPs; and on the resilience of the urban service delivery system.

1.0 INTRODUCTION

Globally, over 700 million people lack access to safely managed water,[1] and 1.8 billion people lack access to safely managed sanitation services[2] in urban areas (World Health Organization [WHO] and United Nations Children's Fund [UNICEF] Joint Monitoring Programme [JMP] n.d.). This number is likely to keep growing as approximately 78 million people continue to migrate to cities and their fringes every year (Birkmann et al. 2016).

Across low- and middle-income countries (LMICs), public institutions such as service authorities and service providers, termed in this study as urban local bodies (ULBs),[3] are mandated to provide water and sanitation services across the city to households, businesses, industries, and institutions. However, most cities in LMICs are unable to keep up with the rapid urbanization. ULBs are unable to provide citywide coverage as they are constrained by their financial capacity and/or capabilities, especially regarding fecal sludge management (FSM). Available estimates suggest that anywhere between 44% and 51% of urban populations may be unserved by piped water, and 72% to 84% lack sewered connections in Sub-Saharan Africa and South Asia (refer to Figure 1). In the absence of reliable public service provision, a significant proportion of this population receives informal services from small local providers (SLPs).

Figure 1: Proportion of population unserved by piped water and sewer connections



Note: The proportions for urban South Asia were estimated using a weighted average of the proportions across three countries—India, Pakistan, and Bangladesh—representing 97% of South Asia's urban population.
Sources: Eberhard 2019; WHO and UNICEF JMP 2021; International Institute for Population Sciences (IIPS) and ICF 2021; National Institute of Population Research and Training (NIPORT) and ICF 2020; National Institute of Population Studies (NIPS) and ICF 2020.

This study aimed to understand possible approaches for ULBs (and other stakeholders) to formally leverage SLPs to expand and improve coverage of drinking water and FSM services in LMIC contexts. The study focused specifically on drinking water and FSM services to households, as these services are commonly delivered informally by a plethora of SLPs in urban LMIC contexts. The study also looked at equity and resilience considerations. Equitable access to WASH is critical for ensuring equitable access

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1 Safely managed water refers to drinking water obtained from an improved water source that is accessible on premises, available when needed, and free from fecal and priority chemical contamination (WHO and UNICEF JMP n.d.).

2 Safely managed sanitation services refer to the use of improved facilities that are not shared with other households, and where excreta are safely disposed of in situ or removed and treated off-site (WHO and UNICEF JMP n.d.).

3 ULBs can be service authorities, such as city corporations (e.g., Kampala Capital City Authority (KCCA) in Kampala, Uganda), or service providers, such as public utilities (e.g., Kisumu Water and Sanitation Company Limited (KIWASCO) in Kisumu, Kenya), depending on the sector and context.

to other socio-economic opportunities and capabilities. Resilience is important because the broader urban service delivery system (for water and FSM) also needs to be resilient, i.e., needs to be able to mitigate, adapt to, and recover from shocks, in the face of increased urbanization and climate risks.

The study included the following:

- **Literature review** to understand:
  - Key characteristics of SLPs' service provision, including coverage and the type of households served, and the quality of services, in terms of safety (e.g., treatment of water, safe disposal of waste), reliability and customer service, and affordability;
  - Possible challenges to leveraging SLPs formally, such as their need for, and barriers to accessing formalization, capacity-building, and financing support; and
  - Preliminary analysis on the presence of marginalized SLPs (such as women and manual emptiers) and the barriers faced by them.
- **Intervention database review and case studies** to identify and research select examples of ULBs formally leveraging SLPs to understand their enabling factors and actions, challenges, and the impact on service delivery.

Based on the evidence reviewed, the study presents key findings and areas for future research on this topic. This report is organized into six main sections:

- **Methodology and definitions** used for the literature/database review and case studies;
- **Key findings from the literature review**;
- **Market archetypes and transitions** developed based on the literature review;
- **Case study briefs,** providing details on each case study;
- **Conclusions from case studies**; and
- **Areas for further research** to build the knowledge base on the topic of leveraging SLPs.

2.0 METHODOLOGY AND DEFINITIONS

2.1 METHODOLOGY

The team conducted the study in two phases. Phase 1 included (a) a literature review and (b) the development of an intervention database. Phase 2 included in-depth, desk-based case study research of example interventions where ULBs formally leveraged SLPs.

2.1.1 PHASE 1: LITERATURE AND INTERVENTION DATABASE REVIEW

Literature Review

The review consisted of gray and peer-reviewed literature sourced using a three-step process:

- **Search string sourcing:** The study team identified an initial set of literature by scanning general search engines, using a separate set of search strings for FSM and water. This supplied a starter list of documents—typically seminal papers that provided an overview of drinking water and FSM service provision by SLPs. Table 1 shows a sample list of the search strings used to identify these documents.

Table 1: Sample search strings for identifying documents in each sector

Water	FSM
• "Informal water provision" • "Local providers" and "water supply" • "Small players" and "water supply" • "Water supply" and "informal settlements" • "Low-income settlements" and "water supply" • "Water supply" and "kiosk operators"	• "FSM" and "manual emptier" • "FSM" and "private truck operators" • "Local providers" and "FSM" • "FSM" and "dense settlements" • "On-site sanitation" and "small operators" • "FSM" and "safe disposal"

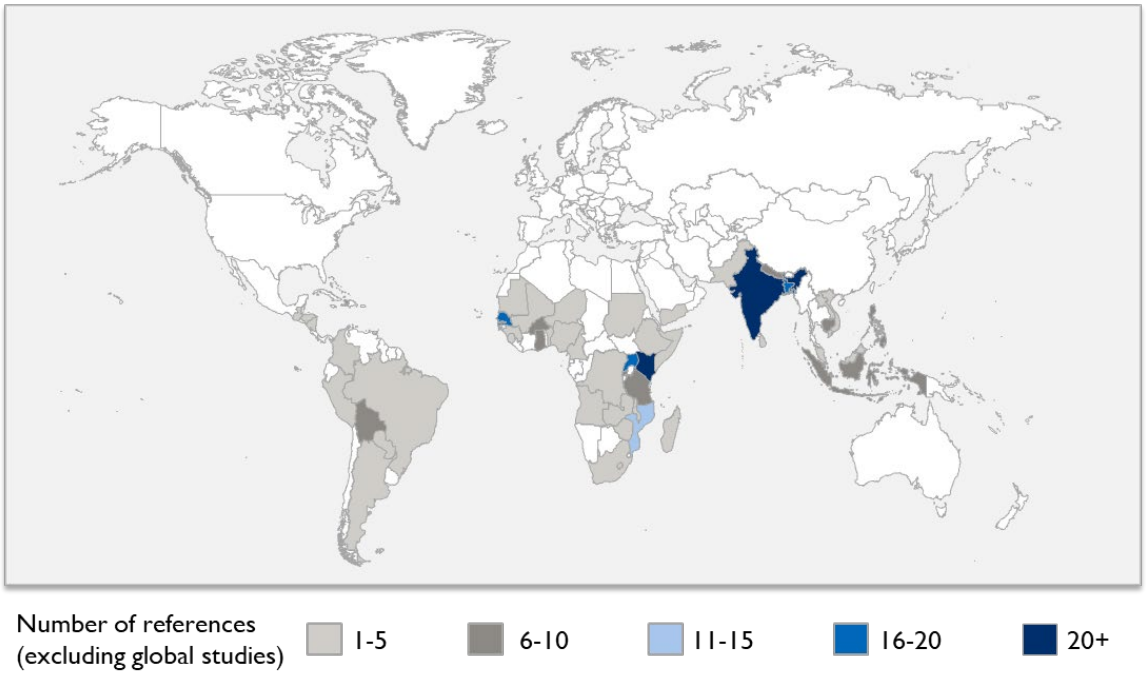
- **Snowballing:** Considering the nascent nature of the inquiry into this topic, the team identified additional documents that were cited in the initial set and appeared to be particularly relevant to understanding SLP service provision.
- **Targeted search:** The team conducted a targeted review to close specific evidence gaps. This review consisted of documents from two sources:
  - Recommendations by experts (typically, the authors of the literature sourced for the study in the first two steps), and
  - Search strings to address specific geographies not covered through literature sourced in the first two steps.

Literature on formalization of SLPs providing water and sanitation services was limited. The team conducted a targeted literature review of non-WASH small enterprises (in sectors such as trade, food, or transportation) to understand formalization of small enterprises. A systematic analysis of SLPs' management capacity was also a gap in literature. The study referred to multiple sources to assess SLPs' management capacity based on their ability to manage the three flows that are part of businesses: product, finance, and information.

Overall, the team reviewed 127 documents across 48 countries (see Figure 2), which included 62 peer-reviewed and 65 gray literature (refer to Appendix C for further categorization of literature reviewed).

The team also conducted 18 key informant interviews (KIIs) to validate the findings from the literature review. These KIIs were conducted primarily with authors of the documents sourced for the literature review.

Figure 2: Geographic spread of literature reviewed



Intervention Database Review

The team identified a total of 1,397 WASH projects,[4] primarily using the program databases of ~50 funders and implementers, and through literature and KIIs. Of this, 86 projects with interventions involving SLPs for delivering urban drinking water or FSM services were shortlisted for further analysis. Seventeen interventions with a high focus on SLPs and a relatively high scale of impact were prioritized for a nuanced review. The team classified interventions as high-scale if they engaged with 20 or more SLPs or impacted at least 20,000 households—a conservative estimate for an urban setting, since these numbers typically cover only a few low-income settlements in large, dense cities. The team used these 17 interventions to shortlist the case studies, as detailed in the next section.

Appendix A provides a detailed description of the creation of the database of WASH interventions and the criteria used to arrive at the final selection.

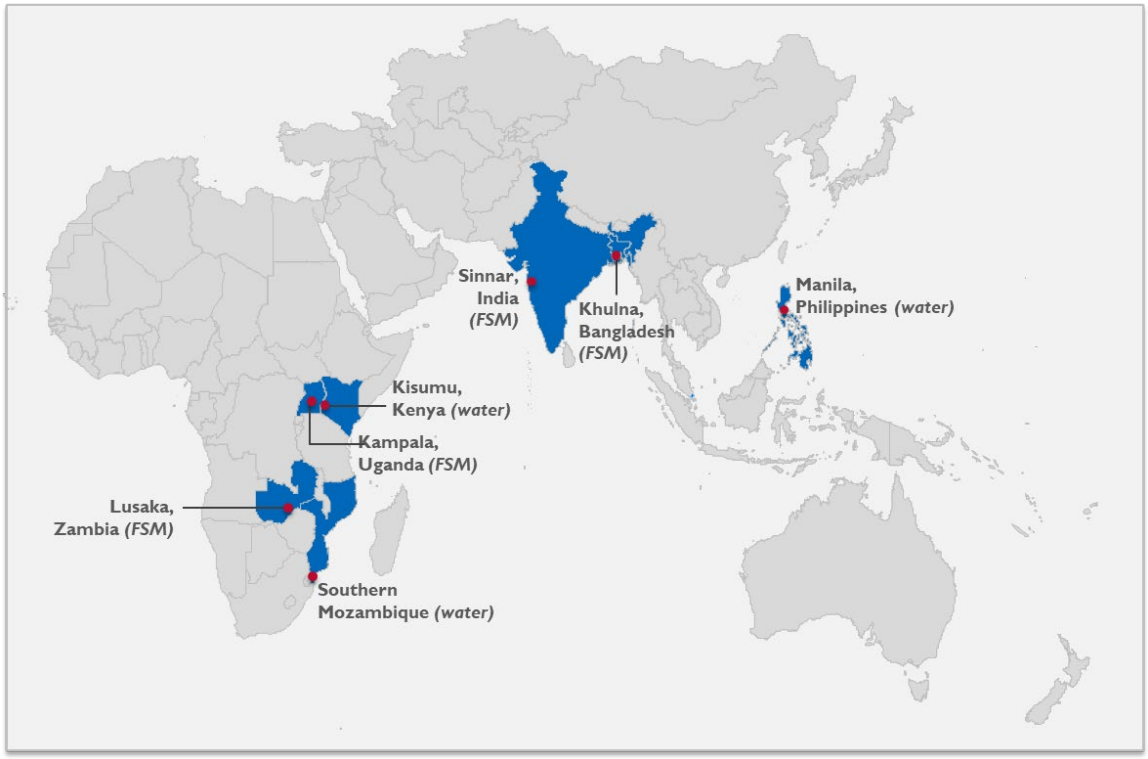
2.1.2 PHASE 2: IN-DEPTH CASE STUDIES

The team selected six case studies from the 17 projects with high SLP focus and scale identified through the intervention database. The selection was based on inputs from six experts (including funders, implementers, and researchers) and ensuring diversity across geography, sector, and city size.

[4] Projects included both standalone interventions (e.g., capacity-building training sessions) and larger programs with multiple interventions operating within it. These included both donor-funded projects and ULB-led interventions (without donor funding).

Additionally, the team developed a caselet[5] on scheduled desludging in Sinnar, India. Initially, the scheduled desludging model was meant to be part of the Khulna case study. However, the model was not implemented in Khulna (despite being cited in the literature review), and the development of the caselet on Sinnar ensured that insights on this particular intervention were captured. The final list included cities across Asia and Sub-Saharan Africa (see Figure 3).

Figure 3: Selected geographies for case study research



The case studies included a review of available program documents and KIIs for each intervention. The team sourced the documents through implementer websites and a broad web search. The team conducted multiple interviews with ~30 key informants, including ULBs, implementers, and SLPs. The key informants also provided the team with additional program documents to help close specific evidence gaps within each case study.

Literature and KIIs across the case studies did not discuss the equity and resilience considerations of interventions using a consistent set of parameters. To address this gap, the study analyzed equity and resilience as follows:

- For equity, the analysis focused on barriers faced by women-led enterprises and manual emptiers. The study explicitly focused on these two groups since they often represent the most marginalized SLPs in many contexts. Additionally, the study aimed to gain a preliminary understanding of the level of equity in pricing and coverage of the SLPs' service provision post-intervention. For equitable prices, the team compared SLP prices to those paid by households receiving services directly from the ULB (i.e., typically paid by higher-income customers). For

[5] A caselet is a shorter version of a case study. It is a targeted capture of the most relevant elements of the case (in this case, scheduled desludging) without studying other elements.

equitable coverage, the team captured available information on the type of households that received access to services under the intervention.

- For resilience, the analysis focused on understanding the ability of the broader urban service delivery system (for water and FSM) to mitigate, adapt to, and recover from shocks. The study analyzed resilience through expected changes in resilience indicators since the case studies did not present actual data on the impact of shocks. Theoretically, improvement in these indicators improves the ability of the system to absorb shocks. The study developed these indicators based on a rapid literature review (refer to Appendix B for details on the resilience indicators).

It is worth noting that the case studies were positive deviants, i.e., they represented examples of initiatives (both successful and failed) to formally leverage SLPs. Studying positive deviants was valuable for developing findings and areas for further research, given the nascent nature of sector knowledge on this topic. The case study of Khulna represented an unsuccessful attempt by the ULB to formally leverage SLPs. This case study allowed the team to identify common factors and differences with the other successful initiatives.

Additionally, the case studies did not present sufficient data for a nuanced analysis of several topics, including household-level analysis of equity and resilience, the impact of transitions on marginalized SLPs, and the climate impact of SLP service provision. These topics warrant explicit focus through further studies.

2.2 DEFINING SMALL LOCAL PROVIDERS

The study defined small private players providing informal services to households through a rapid literature review and the case study research.

The literature used a variety of terms to refer to small private players.[6] For water services, this included "small water entrepreneurs," "small scale independent providers," and "*Aguateros,"* or more specific terms such as "kiosk/standpipe operators" (Garrick et al. 2019). For FSM, this included "small-scale independent providers" (van Dijk 2008; Allen, Hofmann, and Griffiths 2010), "small-scale providers of sanitation services" (Bongi and Morel 2005; O'Keefe et al. 2015), and "informal pit-emptying labor" (multiple sector websites).

The case study research also highlighted diversity in the players involved in service provision and the formalization indicators[7] they have. Given this, the study defined these small private players broadly as "small local providers" (SLPs):

- **Small:** Enterprises with fewer than 50 part-time or full-time employees.[8]
- **Local:** Enterprises that serve water and sanitation micro-markets in the absence of direct ULB-led service provision.

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6 The examples in these studies primarily referred to small-sized operators, but some of these terms may include mid- or large-sized operators too.

7 Indicators can include membership of a registered collective, access to formal finance, tax code and company registration, license to provide drinking water and FSM services from a state/national body, and memorandum of understanding (MoU)/service-level agreement (SLA)/contract with the ULB.

8 The study team defined "small enterprises" by adapting the threshold for the number of employees from the International Labor Organization (ILO) (ILO 2019). The threshold for small enterprises (enterprises with 10–49 employees as per the ILO) was expanded to include "micro-enterprises" (enterprises with 2–9 employees as per the ILO), since enterprises of this size are typical for providing drinking water and FSM services. Both part-time and full-time employees are also included, given that small-scale enterprises will often hire labor on a contractual basis, especially for FSM services.

3.0 KEY FINDINGS FROM THE LITERATURE REVIEW

The literature review highlighted that SLPs are prevalent in urban LMICs and customers may prefer their services in some contexts, but there are challenges to the safety and affordability of their services. The key findings are:

- SLPs play a critical role in filling the gap in urban service provision, operate across a variety of service delivery models, and can serve customers across income segments.
- Customers in some contexts prefer SLPs' services as they perceive them to be reliable and accessible.
- SLPs may follow unsafe practices, such as inadequate treatment of water or unsafe collection and disposal of waste.
- SLP services are less affordable than ULB services, driven by high service delivery and "informality costs;" water SLPs may also engage in discriminatory and exploitative pricing.

The literature review also highlighted that there are potential challenges to formally leveraging SLPs (especially those from marginalized groups). The key findings are:

- SLPs can face barriers for formalization, potentially due to lack of appropriate frameworks and challenges to complying with formalization processes.
- SLPs need and value capacity-building support but face barriers to accessing it.
- SLPs face barriers to accessing formal financing.
- SLPs can belong to marginalized groups, who face additional barriers to accessing capacity-building and formalization initiatives.

This section details these key findings.

SLPs play a critical role in filling the gap in urban service provision, operate across a variety of service delivery models, and can serve customers across income segments.

Over the last several decades, literature has highlighted the prevalence of SLPs in the informal provision of urban water and FSM services.

A study conducted in the 1970s highlighted that private water vendors served 21% of households in low-income settlements in East Africa (White, Bradley, and White 1972). An updated version of this study revealed that they continue to be major players in the region, supplying water to 15% of the households in urban areas (Thompson et al. 2001). There are similar examples of *small-scale water providers* in Manila, Philippines (Cheng 2014); *water vendors* in Dhaka, Bangladesh (Kjellén and McGranahan 2006); and *Aguateros* in Paraguay (Troyano 1999), to name a few. Several multi-country studies (Snell 1998; Garrick et al. 2019; Baker 2009) also capture the prevalence and role played by private providers of water services.

SLPs are prevalent in the provision of FSM services too. Only 16% of the population of urban Sub-Saharan Africa has access to sewered connections (WHO and UNICEF JMP 2021), while the rest relies on FSM services, often provided by SLPs. Numerous multi-country studies cite the continued prevalence of FSM SLPs in several LMIC contexts (Chowdhry and Kone 2012; Rao et al. 2016; World Bank 2019b). Additionally, there are examples of *small-scale providers of sanitation services* in Kibera, Kenya (Bongi and

Morel 2005), *private FSM contractors* in Malaysia (Ho et al. 2012), *sweepers*[9] in Bangladesh (Al-Muyeed, Nath, and Basar 2018), and *Gulper entrepreneurs*[10] in Kampala, Uganda (KCCA 2017), among others. Several studies specifically emphasize the prevalence of manual emptying across contexts, such as in India (World Bank 2019b), Peru (Mujica and Uriarte 2016), and Mozambique (Muximpua et al. 2017).

More recent literature acknowledges not just the prevalence of SLPs but also the critical role they play in filling the gaps in ULB-led service provision in a rapidly urbanizing world (Hawkins, Blackett, and Heymans 2013; Safe Water Network 2018). ULB-led services struggle to keep pace with the rate of urbanization (Baker 2009; Rainaa et al. 2019). High density in settlements due to rapid urbanization poses physical barriers to increasing ULB-led coverage, such as difficulties in expanding ULBs' piped water or sewerage networks (Safe Water Network 2018; Hawkins, Blackett, and Heymans 2013). In many contexts, SLPs also coexist with ULBs. A study conducted in Bangalore, India, suggests that customers with access to formally provided water also purchase water from water tankers (Ranganathan 2016). For FSM, a study conducted in Vietnam suggests that households purchase emptying services from a mix of state-owned, limited liability, and private companies (Anh et al. 2011).

Water SLPs operate across various types of service delivery models. Several peer-reviewed papers have developed typologies, with one commonly cited typology based on source dependency and technology employed for distribution (Kariuki and Schwartz 2005) (refer to Table 2).

Table 2: Types of water SLPs based on source dependency and technology

Technology Employed	Relationship to Source	
	Independent *(Develop own source)*	**Dependent** *(Source supplied by larger utility)*
Network	Integrate production with distribution via mini-piped networks	Source water from the utility and distribute via mini-piped networks
Point-Source	Own-source and distribute at fixed locations	Source from utility mains and sell at fixed locations
Mobile Distributors	Own-source and distribute via mobile means	Source from utility and distribute via mobile means

Source: Kariuki and Schwartz 2005

A paper studying SLPs in Bangladesh, Cambodia, Kenya, and the Philippines merges the six categories in Table 2 into four by eliminating the criterion of "source dependency" and basing typology simply on the distribution systems employed (Baker 2009). It also includes an additional category of "value-added player" that may use combinations of point-source and mobile distribution to sell treated water. The revised typology is:

- **Private Network Operators:** Supply water through piped connections of varying lengths and complexity.

[9] In Bangladesh, manual emptiers called "sweepers" belong to lower caste communities and engage in cleaning solid or fecal waste.

[10] "Gulper" refers to a semi-mechanical device used to pump fecal sludge from pits as an alternative to unsafe manual emptying.

- **Point-Source Vendors:** Supply water to customers at a point like kiosks or standpipes, where customers fill their containers.
- **Mobile Water Vendors:** Supply water to households through door-to-door transportation via trucks or handcarts.
- **Value-Added Water Vendors:** Supply water using point-source or mobile vending models, but the key distinction is the treatment of water using sophisticated systems, as seen in the case of *water refilling stations* in the Philippines and *treated water distributors* in Bangladesh.

The various typologies presented in literature may not account for all the functions involved in the delivery of water services (e.g., the typologies above do not explicitly differentiate based on how the water is treated). Additionally, literature is unclear on the ownership of assets (e.g., community-based vs. privately owned) across these typologies.

FSM in LMICs involves four stages—emptying, transport, treatment, and disposal or reuse (Centre for Affordable Water and Sanitation Technology [CAWST] 2016). Literature from varied contexts highlights that FSM SLPs are typically involved at the emptying and transport stages, primarily using two service delivery models (Rao et al. 2016; WaterAid 2019):

- **Manual Emptying:** Emptying is carried out manually using shovels and buckets and typically transported using handcarts before being dumped in the open.
- **Mechanical Emptying:** Emptying and transportation of waste is done mechanically, typically using vacuum trucks, and is either taken to a fecal sludge treatment plant for treatment or disposed of in the open.

Literature presents interventions across the different stages of FSM, with some involving SLPs, but most face challenges:

- **Emptying:** Implementing programs introduced technologies (e.g., Gulper in Uganda and Tanzania, and MAPET[11] in Tanzania) to support SLPs to serve dense settlements inaccessible by vacuum trucks. However, the Gulper was deemed unsuitable for emptying solid sludge, and the MAPET led to high maintenance costs for operators (GOAL 2016).
- **Transport:** Implementing programs introduced transfer stations (e.g., in Kampala, Uganda) to reduce transportation costs and increase safe disposal by SLPs. KIIs with implementers highlight that pilots involving mobile transfer stations closed down due to high costs and low utilization.
- **Treatment and reuse:** Interventions across several contexts have attempted to treat fecal sludge to generate value-added products, such as biogas by Umande Trust, Kenya (Gebrezgabher, Odero, and Karanja 2018), solid fuel by the Nakuru Water and Sewerage Company, Kenya (Simiyu, Chumo, and Mberu 2021), and compost in Sakhipur, Bangladesh (WaterAid 2019). These models do not typically involve SLPs beyond the disposal of fecal sludge (Couder and Kibuthu 2020; Mallory et al. 2020). The sector is nascent, and most models fail to recover costs.
- **Across stages:** Container-based sanitation has attempted to create an end-to-end offering wherein fecal sludge is hygienically collected every 1–2 weeks from dry containment facilities, designed with sealable and removable containers, taken for treatment, and safely disposed of or reused (Container-Based Sanitation Alliance [CBSA] n.d.). KIIs with implementers suggest that SLPs may be involved only in the collection and transfer of fecal sludge. Literature suggests that

[11] The MAPET, developed by WASTE in Tanzania in 1992, is a human-powered vacuum system consisting of two components, a piston pump and a 200-liter vacuum tank, both mounted on push carts (GOAL 2016).

container-based sanitation may have limited scalability due to lack of demand since customers prefer permanent structures as they become more affluent (Dewhurst et al. 2019).

Water SLPs typically serve low-income households. However, they can serve other income segments, based on the service delivery model and context:

- Standpipe or kiosk operators typically serve low-income households (e.g., in Bangladesh, Kenya, and Philippines) (Baker 2009).
- Purified water resellers typically serve higher-income households (e.g., in Bangladesh and Philippines) (Baker 2009).
- Tanker trucks and small piped network operators serve both. For example, tanker trucks cater to low-income households in Philippines but higher-income households in Kenya (Baker 2009). Small piped operators in Maputo, Mozambique, serve low-income households in peri-urban areas but higher-income households in the northern parts of the city (Collignon, Chaponniere, and Valfrey 2008).

Data on the income-level of households served by FSM SLPs is not available. FSM literature typically classifies households based on the type of sanitation facility (sewered connection or non-sewered sanitation system) rather than on income (Simiyu, Chumo, and Mberu 2021; Weststrate et al. 2019), although access to sewered connections may itself indicate higher levels of income (Weststrate et al. 2019).

Customers in some contexts prefer SLPs' services as they perceive them to be reliable and accessible.

A study of water SLPs across 49 countries showed that households may prefer SLPs' services to utility-led services, even when the former is more expensive, as they are reliable and deliver water on demand (Kariuki and Schwartz 2005). SLPs' services are also considered more accessible as they are tailored to the needs of their customers. SLPs offer credit facilities and flexible payment terms, and do not seek title deeds and rental agreements (Kariuki and Schwartz 2005). An analysis of over 100 studies on informal urban water markets showed that tanker truck operators may also offer flexible payment schemes (e.g., the option to pay through credit) that are attractive to low-income customers (Garrick et al. 2019).

Customers' preference for SLPs' services may also be indicated by their high share of repeat customers and growing market share in some contexts. In Bolivia, water SLPs highlighted having several regular customers that purchase from them on a daily basis (Wutich, Beresford, and Carvajal 2016). FSM SLPs in Madagascar also observed a high share of repeat customers (Gardiner et al. 2017). In Mozambique, private water providers (PWPs), also known as *Fornecedores Privados de Água* (FPAs), appear to be benefitting from a growing market share. As of 2010, there were only 400 PWPs in Greater Maputo. By 2021, there were over 1,800 PWPs serving two million customers (United States Agency for International Development [USAID] 2021). It is worth noting that this literature does not present details on the alternatives to these services for the households, so the high share of customers and growing demand could also indicate a lack of alternative services.

SLPs may follow unsafe practices, such as inadequate treatment of water or unsafe collection and disposal of waste.

Multiple studies highlight the lack of proper treatment of water provided by SLPs (McGranahan et al. 2006; Venkatachalam 2015; Ayalew et al. 2014). For example, in Kisumu, water sourced and sold by SLPs from boreholes is significantly lower in quality than municipally supplied water (Ayalew et al. 2014). Similarly, in Accra, Ghana, water provided by SLPs contains high counts of coliform bacteria, while in

Nigeria, it is associated with diarrhea among children (McGranahan et al. 2006). Unsafe practices are also common among FSM SLPs (Rao et al. 2020). For example, during collection, manual emptiers enter pits without wearing protective equipment and use shovels, ropes, and buckets for emptying (WaterAid 2019; World Bank 2019b; Mujica and Uriarte 2016; Muximpua et al. 2017). For disposal, unsafe emptying into open lands, storm water drainage, or into the sewerage network is common (Chowdhry and Kone 2012).

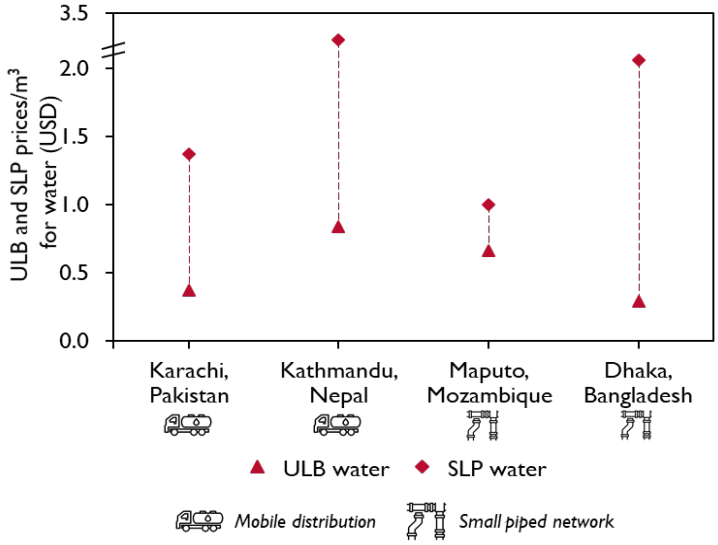
SLP services are less affordable than ULB services, driven by high service delivery and "informality costs;" water SLPs may also engage in discriminatory and exploitative pricing.

SLP services are significantly more expensive than ULB-provided services, both for water (Kariuki and Schwartz 2005) and FSM (Chowdhry and Kone 2012). Price data across multiple studies illustrate this point (see Figure 4 and Figure 5).

Literature does not present data comparing the cost structures of SLPs and ULBs (providing either piped or decentralized services) from the same context. However, the higher prices of SLP services may be attributed to the subsidized nature of ULB-led services, differences in service delivery and "informality" costs faced by SLPs and ULBs, and practices of discriminatory or exploitative pricing, especially by water SLPs.

ULB-led services are typically subsidized, reducing their need to cover the full costs associated with service provision. Literature does not provide evidence of SLPs receiving such benefits. Further, ULBs may benefit from economies of scale since they serve a higher number of customers than SLPs, but literature does not present data to illustrate this.

Figure 4: Comparison of ULB and SLP prices to households for water across contexts (United States dollars [USD]/m³)

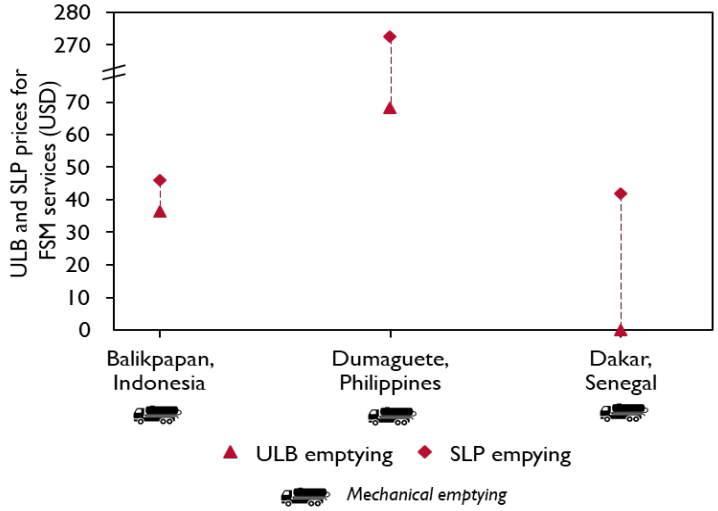


Notes:

- *The above figures have been normalized to USD rates and adjusted for inflation until 2021, where the base year is derived from the year of publication.*
- *If ranges were provided for price, the average of the range was used.*

Sources: Abdullah 1999; Abu-Lohom et al. 2018; Bhatt 2014; Baker 2009; Rainaa et al. 2019.

Figure 5: Comparison of ULB and SLP prices to households for FSM services across contexts (USD per emptying trip)



Notes:

- *The above figures have been normalized to USD rates and adjusted for inflation until 2021, where the base year is derived from the year of publication.*
- *If ranges were provided for price, the average of the range was used.*
- *"ULB emptying" refers to instances where the public utility provides emptying services for non-sewered sanitation systems.*

Sources: Siregar and Listyasari 2017; Potter et al. 2017; USAID 2022.

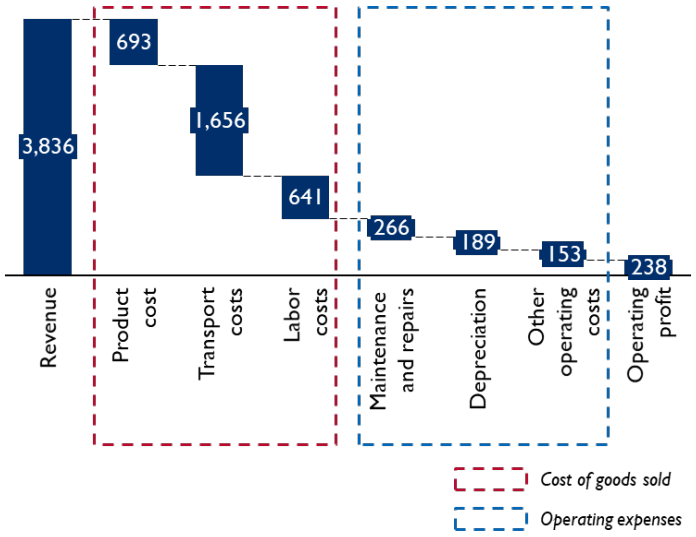
SLPs also face high service delivery costs, driven by initial investments to establish, run, and scale up a business (USAID 2020a; Wutich, Beresford, and Carvajal 2016) and operational costs incurred in delivering services (Mulenga 2019; Dodane et al. 2012). Sample costing data of a tanker truck operator in Kathmandu, Nepal, and an FSM truck operator in Tambacounda, Senegal, illustrate the costs incurred by SLPs (see Figure 6 and Figure 7, respectively).

Water SLPs have up-front investment costs, such as costs of setting up infrastructure for sourcing water from utility mains borne by kiosk operators in Kibera, Kenya (Brocklehurst 2005). They also face various operational costs, such as high transportation costs incurred by water tanker truck operators in Kathmandu, Nepal (Rainaa et al. 2019), high electricity costs for pumping underground water borne by PWPs in Maputo, Mozambique (Bhatt 2014), high rates of sourcing water from the ULB by SLPs in Kampala, Uganda (Pangare and Pangare 2008), and depreciation costs incurred by water tankers in Luanda, Angola (Cain 2018).

FSM SLPs incur up-front investment costs in purchasing equipment and means of transporting sludge, as seen by the high costs of purchasing vacuum trucks observed in Malaysia (Chowdhry and Kone 2012), Senegal (USAID 2022), and Mozambique (Muximpua et al. 2017). Operational costs include fuel costs for transporting fecal sludge from the emptying to the disposal site by vacuum truck operators (VTOs) in Tambacounda, Senegal (USAID 2022), disposal fees at fecal sludge treatment plants in Blantyre, Malawi (Mulenga 2019), and labor costs incurred by pit emptiers in Kigali, Rwanda (Sklar et al. 2017), and Pokhara, Nepal (Shrestha 2018).

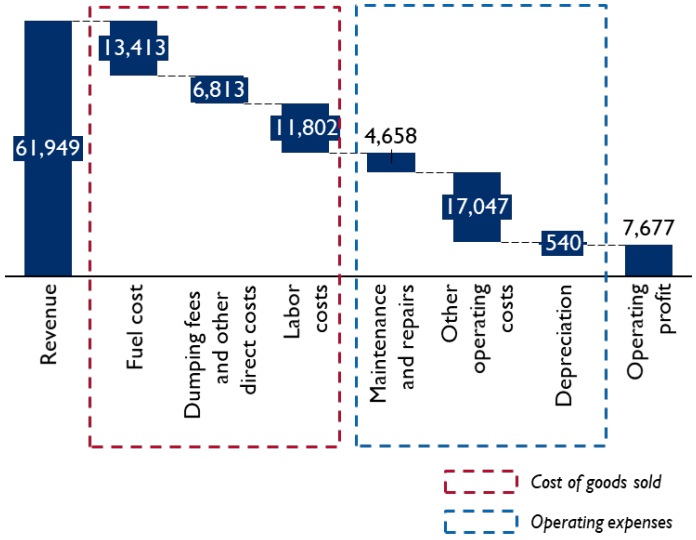
ULBs may potentially face comparatively lower costs for certain line items. For example, they may have lower product costs than water SLPs (since they can procure water at cost), and may not need to pay the disposal fees incurred by FSM SLPs.

Figure 6: Sample monthly cost structure for a water tanker truck operator in Kathmandu, Nepal (2019) (USD)



Note: Costs have been converted to USD using the average exchange rate for 2021.
Source: Rainaa et al. 2019.

Figure 7: Sample annual cost structure for an FSM VTO in Tambacounda, Senegal (2021) (USD)



Notes:

- *Costs have been converted to USD using the average exchange rate for 2021.*
- *Other direct costs include local fees, penalties, fines, and costs for chemicals.*
- *Other operating costs include marketing, rent/real estate, and safety equipment.*
- *Depreciation costs for a VTO include the depreciation of trucks, suction pipes, and tires.*

Source: Based on analysis of data captured for an FSM research activity in Senegal (USAID 2022).

Water SLPs may face "informality" costs, too, such as payoffs to local officials (Brocklehurst 2005) or high-interest rates on informal loans (Baker 2009). Literature does not highlight similar examples for FSM. The study team did not come across literature that systematically quantified these costs, potentially due to the challenges of capturing this information (as SLPs or government actors are unlikely

to share it). ULBs do not need to incur such "informality" costs. It is worth noting that SLPs may also benefit from their "informality" since they do not have to adhere to regulations, such as payment of taxes or license fees, but the literature reviewed did not document or quantify such benefits.

Finally, SLPs may engage in discriminatory pricing, especially for water. For example, water SLPs in Cochabamba, Bolivia, charge higher prices to customers living in squatter settlements in the impoverished south side of the city than to those living in other parts. The higher prices reflect the higher cost of supplying water in the remote informal settlements with rough roads for a low single-trip volume of water purchased by poorer households (Wutich, Beresford, and Carvajal 2016). Water vendors in Mumbai, India, also charge higher prices to seasonal customers (relative to regular customers) during periods of high demand and low water availability in the summer (Angueletou-Marteau 2008). They may also engage in exploitative pricing, despite regulatory measures such as tariff setting, in the absence of adequate measures to ensure compliance. For example, water SLPs in Nakuru and Kericho in Kenya can charge up to four times higher rates than the stipulated tariffs due to inadequate oversight of SLPs' activities by the local authorities (Boakye-Ansah et al. 2019). Literature did not document evidence of exploitative or discriminatory pricing for FSM.

SLPs can face barriers for formalization, potentially due to lack of appropriate frameworks and challenges to complying with formalization processes.

There is limited literature documenting barriers for formalization of SLPs of water and sanitation services. Select literature from the WASH sector indicates that existing regulatory frameworks do not explicitly account for formalization of SLPs. Regulation in the WASH sector is often limited to piped drinking water or sewered sanitation (Weststrate et al. 2019), which typically does not apply to SLPs.

A study of literature on the formalization (e.g., through business incorporation, registration with a taxation authority, and licensing status from various local authorities) of non-WASH SLPs (such as those operating in the trade, food, or transportation sectors) in LMIC contexts highlights significant barriers for SLPs to formalize. These include:

- **High complexity** of the formalization process (Albaz et al. 2020) and time costs exacerbated by bureaucratic procedures, which discourage formalization, as observed in Sri Lanka (van Elk and de Kok 2014);
- **Lack of information** about the necessary processes, costs, and benefits of formalization, as observed in Malawi (Campos, Goldstein, and McKenzie 2018);
- **Lack of incentives** or rewards to benefit from being formalized (Albaz et al. 2020);
- **Limited entrepreneurial capacity** or productivity among informal firms to meet regulatory costs and reap the benefits of formalization, as observed in Brazil (Jaramillo 2009); and
- **High costs of compliance** post-formalization that are primarily repetitive, like tax liabilities, as observed in Mozambique (Berkel 2018) and Benin (Benhassine et al. 2018).

KIIs confirmed that SLPs of water and sanitation services are likely to face similar challenges.

SLPs need and value capacity-building support but face barriers to accessing it.

SLPs appear to have good product management capacity, indicated by their ability to maintain their infrastructure despite using old equipment. For example, FSM SLPs across India and countries in Africa use old, secondhand trucks to deliver services (Chowdhry and Kone 2012; Rao et al. 2020).

Literature does not provide information to assess SLPs' financial management capacity. KIIs indicate that SLPs can manage payments from the customer and to the supplier (i.e., manage working capital) but lack the ability to execute growth plans or plan long-term capital investments.

SLPs appear to lack information management capacity, including the standard internal processes to maintain service and financial records, and long-term business plans (USAID 2019, 2020a; McGranahan et al. 2006; Water and Sanitation for the Urban Poor [WSUP] 2017). But literature does not capture whether they have access to data systems (such as customer databases) to make informed business decisions.

Select literature indicates that SLPs seem to be aware of the need to improve their management capacity. Water SLPs in Kenya sought external help for managing technical equipment issues (Baker 2009). For FSM too, SLPs in Senegal appeared willing to improve their capacity (e.g., by documenting their business operations) (USAID 2020c). Literature does not provide information on SLPs' willingness to pay for capacity-building initiatives, but KIIs note that SLPs are unlikely to pay for them.

SLPs may also face other barriers to accessing these initiatives. Many interventions typically target SLPs through collectives, such as associations (USAID 2021), cooperatives, or community-based organizations (CBOs). These collectives may not be accessible to all SLPs since they require meeting certain eligibility criteria and paying a membership fee to join (Mulenga 2019).

SLPs face barriers to accessing formal financing.

SLPs lack access to financing from formal channels, like banks, because they are unable to meet requirements, such as business registration, demonstrated cash-flows, and collateral. In Senegal, for example, bank loans are subject to demonstrated income statements or a guarantee equivalent to at least twice the amount of the loan; this is often beyond the scope of, and therefore excludes, smaller SLPs (*Office National de l'Assainissement du Senegal* [ONAS] 2014). Moreover, complicated loan application processes requiring documents such as business plans and income statements can deter access to formal finance for SLPs (as observed in Cambodia and Senegal) with limited financial management capacity.

SLPs can belong to marginalized groups, who face additional barriers to accessing capacity-building and formalization initiatives.

SLPs from marginalized groups appear to be prevalent in both sectors. These include women-led enterprises for water (Bhatt 2014) and manual emptiers for FSM (World Bank 2019b). These SLPs likely face additional barriers while accessing formalization and capacity-building initiatives due to prevalent social norms.

Women-led enterprises from non-WASH sectors can face institutional and social barriers, such as requiring spousal approval for decisions (Campos, Goldstein, and McKenzie 2018) or competing household duties (Benhassine et al. 2018). There was limited literature documenting the barriers faced by women-led SLPs of water and sanitation services.

Manual emptiers are often hard to find and engage with since manual emptying is illegal in several contexts (Ho et al. 2012; World Bank 2019b). Even in contexts where manual emptiers are formally recognized, they face social ostracization due to negative perceptions of their work (Simiyu, Chumo, and Mberu 2021; Mallory et al. 2020). Manual emptiers, particularly in South Asian contexts (e.g., Dalits in India and Harijans in Bangladesh), face caste-based discrimination, which may even force them to live in unsanitary conditions (e.g., segregated *sweeper* colonies in Bangladesh) (World Bank 2019b).

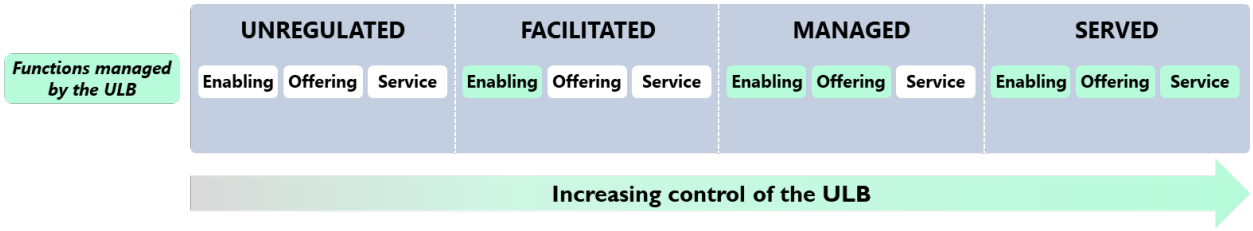
4.0 MARKET ARCHETYPES AND TRANSITIONS

The literature review provides an understanding of the service delivery ecosystem in a city and the roles SLPs can play within it.

4.1 MARKET ARCHETYPES FOR DRINKING WATER AND FSM SERVICES

A city can consist of several micro-markets, i.e., areas receiving different types and levels of water and sanitation services, based on the functions managed by SLPs and ULBs. It is important to analyze specific micro-markets as the market ecosystem varies between micro-markets. This study defined four market archetypes based on the functions ULBs manage in a micro-market (see Figure 8).

Figure 8: Market archetypes



Unregulated markets represent markets served by SLPs in the absence of ULB-led arrangements and in which ULBs do not manage any functions or have oversight over SLPs. The challenges highlighted in Section 3.0 are primarily for unregulated markets.

Facilitated markets are characterized by ULBs influencing the service delivery of SLPs (e.g., through issuance of licenses or the creation of treatment facilities) by managing a range of enabling functions, typically following the introduction of regulatory frameworks for SLPs. Enabling functions can include:

- ***Licensing*** or similar mechanisms that provide SLPs the "right to operate" under specified standards and guidelines (often defined under regulatory frameworks);
- ***Dependency*** or points of interaction of the service with the external environment, which includes sourcing and treatment of water before delivery or disposal and treatment of sludge after delivery; and
- ***Financing*** for enterprises to invest in their business or for customers to pay for services.

Managed markets are characterized by ULBs managing SLPs' offering and enabling functions (e.g., through delegated management models (DMMs) and performance-based contracts). The offering functions define SLPs' core product and marketing functions and include:

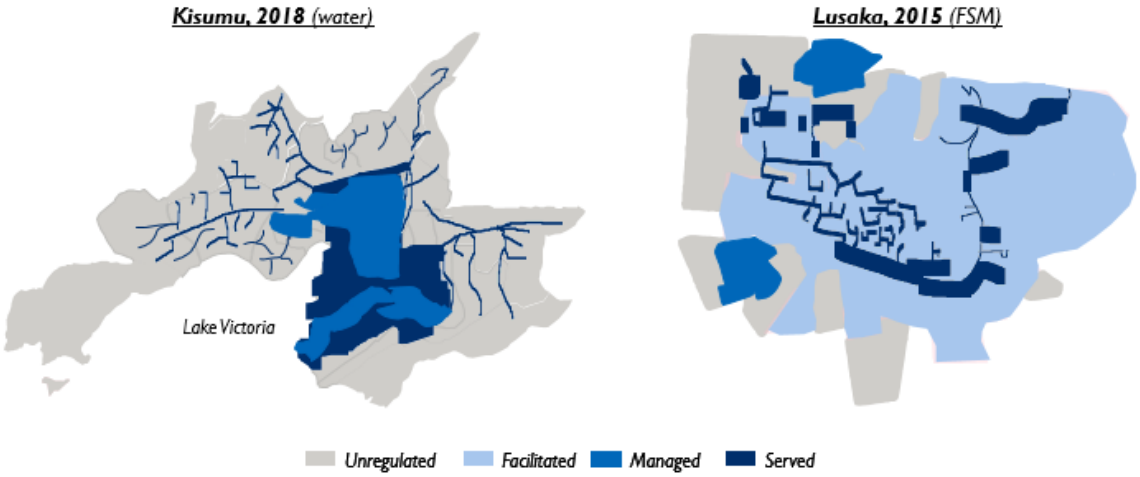
- ***Pricing*** of different types of service delivery for different customer segments;
- ***Customer acquisition*** through selection of micro-markets for SLPs to serve, and sales and marketing efforts;
- ***After-sales engagement*** with the customer beyond the delivery of the service; and
- ***Technology*** employed for delivering services to the customer.

Served markets receive ULB-led provision directly through piped networks or ULB-led decentralized systems (especially for FSM).[12] ULBs manage all the functions, including last-mile service delivery.

In some cases, the last-mile service delivery may involve two separate functions of **transport** and **delivery** of services, especially for decentralized systems. For example, water kiosks require transport of water to the kiosks, followed by delivery of water to households. Similarly, mechanical emptying of fecal sludge requires delivery of the emptying service at the household, followed by transport of waste to a disposal site.

More developed parts of a city typically fall under the served archetype, with the ULB providing piped infrastructure and centralized services directly to households. Settlements along the fringes of the developed areas are often informal, with uncertain tenure rights and inadequate infrastructure. SLPs primarily serve these micro-markets, either operating in an unregulated fashion or alongside ULBs.

Figure 9: Market archetypes in Kisumu, Kenya, and Lusaka, Zambia



Note: The mapping of the micro-markets shown above is not precise but indicative. It is based on a review of piped water/sewerage network maps of the two cities and inputs received during KIIs. The study team verified the final maps with the ULB staff of the two cities. Data on population coverage by market archetype was not available.

Figure 9 depicts the micro-markets (and the corresponding archetypes) for delivery of drinking water and FSM services in Kisumu, Kenya, and Lusaka, Zambia, respectively (both described further in Section 5.0). In Kisumu, as of 2018, the public utility, KIWASCO, provided direct piped connections to the affluent regions in the city center and close to Lake Victoria (shaded in dark blue). Scattered in the middle of these affluent regions were densely populated low-income areas (LIAs) (shaded in medium blue), where KIWASCO partnered with SLPs under a DMM that started in 2004. Here, KIWASCO provided utility water in bulk to the SLPs, who then delivered it to residents in the LIAs. Along the fringes of the city (shaded in gray), unregulated tanker truck operators and pushcart vendors provided water to households unserved by KIWASCO.

Similarly, in Lusaka, in 2015, the central region with affluent, formal settlements had sewered connections (shaded in dark blue). The remaining central districts were served by regulated VTOs (shaded in light blue). In most peri-urban areas, informal manual emptiers were prevalent (shaded in

[12] Decentralized systems entail ULBs providing mechanical emptying and transportation services for non-sewered sanitation systems.

gray). Two peri-urban areas were exceptions since LWSC, the utility, partnered with SLPs to provide "formal" emptying (shaded in medium blue).

4.2 IMPLEMENTING TRANSITIONS TO EXPAND AND IMPROVE SERVICES

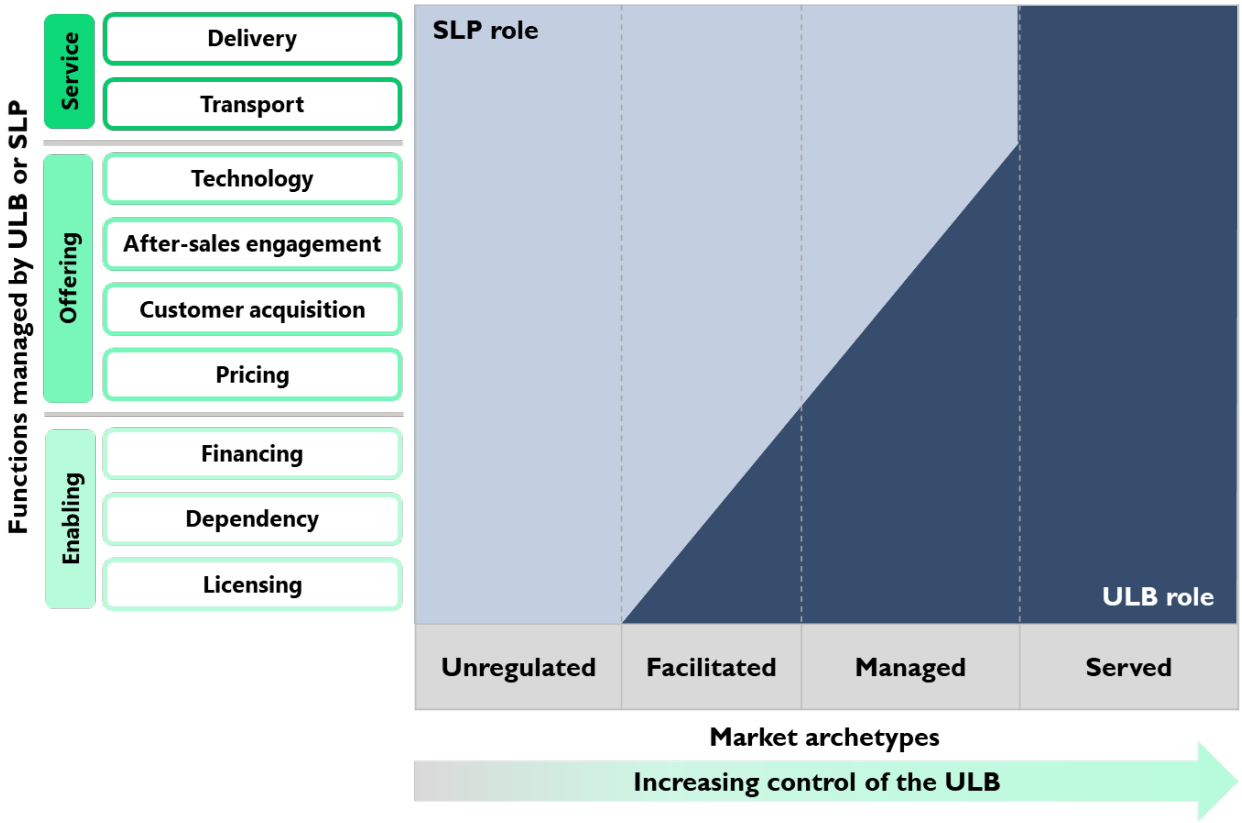
ULBs can expand or improve services and meet their mandate of providing citywide coverage by transitioning micro-markets across the four archetypes (see Figure 8). When ULBs expand and improve services by setting up their own piped and/or decentralized systems, they transition unregulated markets straight to the served archetype.

When ULBs want to formally leverage SLPs to help fulfill their mandate of service delivery, they can transition unregulated markets to the facilitated and managed archetypes.

The on-ground implementation of these transitions to leverage SLPs have two key characteristics. First, ULBs need to set up mechanisms (e.g., permits, contracts) at the micro-market level to manage functions and engage with SLPs. These mechanisms are distinct from merely passing of regulations, which often happens at a national- or sub-national level.

Second, ULBs typically manage enabling and offering functions in an incremental manner (represented by a gradient in Figure 10). This is unlike the transition to served markets, where ULBs can take on both service functions simultaneously (represented by the vertical slope in Figure 10).

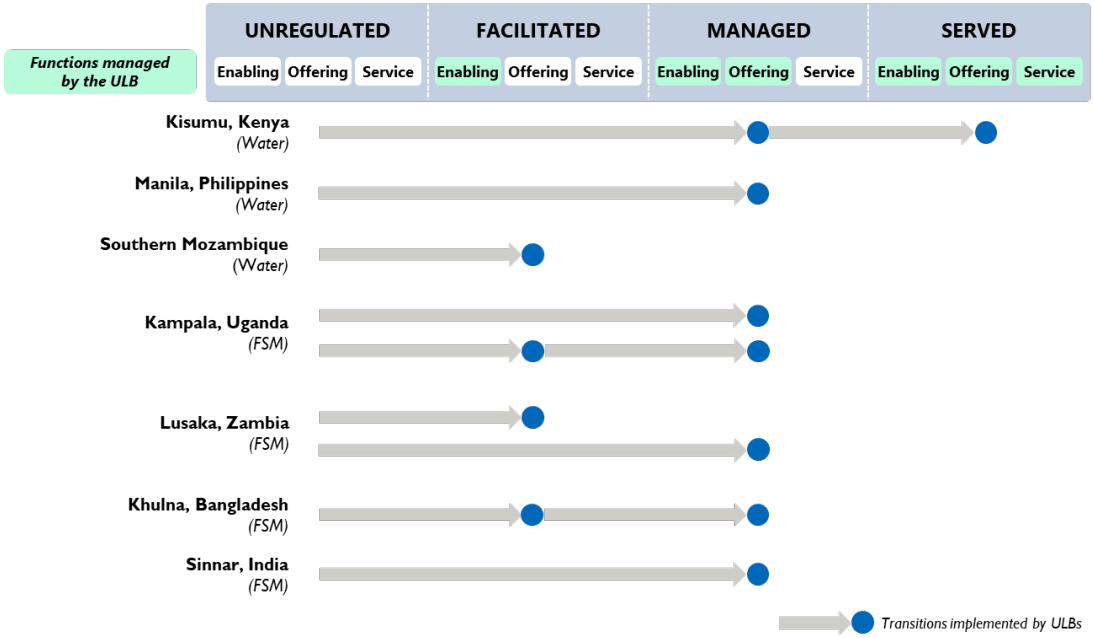
Figure 10: Functions to implement transitions



5.0 CASE STUDY BRIEFS

The case studies aimed to develop a deeper understanding of the market archetypes and transitions described in the previous section. The seven selected case studies and caselet provided coverage across transitions, archetypes, and sectors (see Figure 11).

Figure 11: Transitions implemented across case studies and caselet



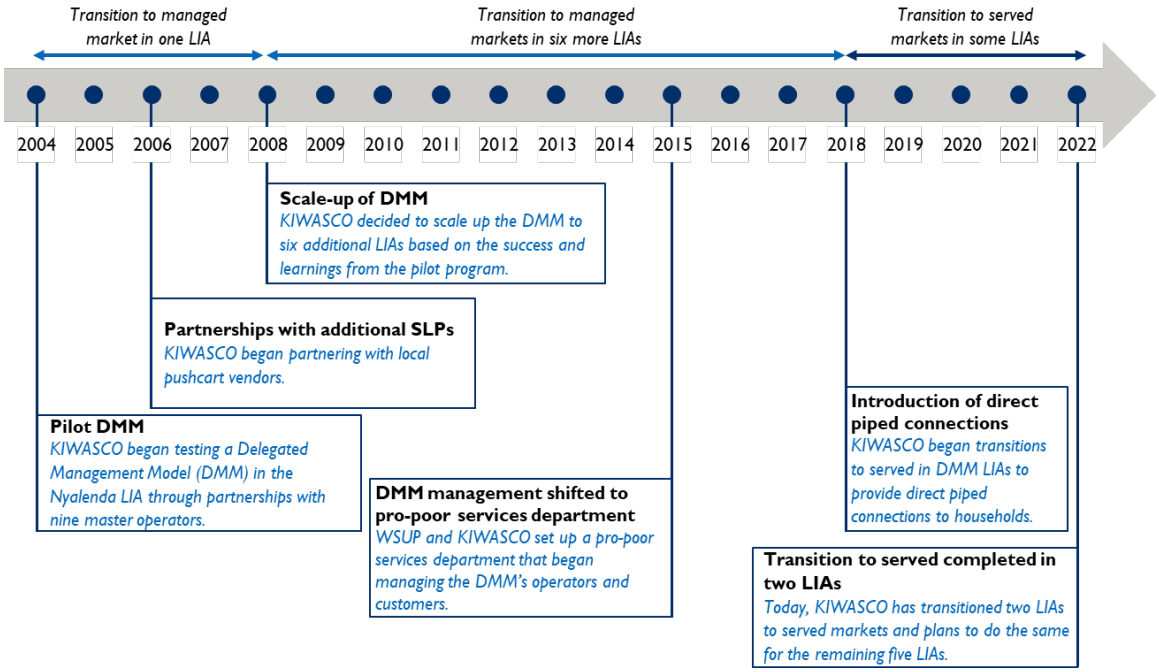
Note: Kampala and Lusaka had two types of transitions each, in different parts of the city, as detailed in the case study briefs below.

This section provides detailed narratives on each case study, while subsequent sections analyze the case studies and present conclusions and areas for further research.

5.1 DELEGATED MANAGEMENT MODEL WITH MASTER AND KIOSK OPERATORS IN KISUMU, KENYA (WATER)

Starting in 2004, KIWASCO partnered with 23 master and 200 kiosk operators in seven LIAs under a DMM. Under the DMM, KIWASCO delivered bulk, treated utility water through piped networks up to the fringes of the LIAs, and the operators delivered this water to the residents within the LIAs through pipes or kiosks. As of today, the DMM has provided 20,000 households access to safe and affordable water in the LIAs, which represents ~25% of the city's total population and ~70% of the population that did not have direct piped connections from KIWASCO in 2022.

Figure 12: Timeline of transitions and activities in Kisumu, Kenya



Note: The timelines for the "Partnerships with the additional SLPs" and the creation of the "DMM management shifted to pro-poor services department" are indicative and not precise.

5.1.1 DMM PILOT IN NYALENDA

Source: KIWASCO n.d.

Only 65% of Kisumu's population received water from the utility, KIWASCO,[13] in 2004. The rest, mostly residents of LIAs, relied on water supplied by cartels. These cartels stole water from KIWASCO's pipes and charged customers prices that were approximately 10 times higher than that for utility-provided connections. Other informal vendors, such as pushcart operators and landlords (through taps built on-premise that illegally connected to utility networks), provided water services as well. There were also frequent cholera outbreaks in LIAs, possibly due to the prevalence of unsafe water in the LIAs.

KIWASCO's non-revenue water (NRW) rates were as high as 85% due to the theft of water from their networks. KIWASCO's pipe networks ran through the LIAs to reach affluent settlements and lay exposed along roads, alleys, and gutters. This made the pipes susceptible to breakage from theft of water by the cartels and vendors in LIAs.

In 2004, KIWASCO decided to address these challenges by piloting a pro-poor program, the DMM, which transitioned the Nyalenda LIA to a managed market. KIWASCO partnered with nine local water operators, termed master operators, who were typically cartel leaders. Under the partnership, KIWASCO was responsible for supplying bulk, treated utility water to master operators by constructing

[13] KIWASCO is the local public utility responsible for providing clean potable water and managing sewerage within Kisumu city.

a new network of pipes to the fringes of the LIA. KIWASCO was also responsible for the maintenance of these pipes. The master operators were responsible for delivering the treated water from the fringes to the households by constructing their own network of pipes, paid for by the households that received the connections. Within the LIAs, master operators were responsible for maintaining the pipe networks.

The utility selected master operators who resided within the LIA through a publicly advertised process. KIWASCO established two-year service contracts with the master operators and enforced quality and tariff standards. These contracts included a clause for contract termination in case of non-compliance. LIAs were verbally allocated to master operators and compliance was achieved since KIWASCO's pipe networks extended only to specific LIAs.

KIWASCO gathered monthly performance reports from master operators for predefined key performance indicators (KPIs), such as compliance with tariffs, master operators' profitability, technical skills (e.g., maintenance of the pipe networks), and service quality. Additionally, KIWASCO provided technical training and support to master operators in laying and maintaining structured piped networks in Nyalenda and operating bulk meters that were set up to monitor the water received by the master operators. KIWASCO also provided letters of recommendation for the master operators to financial institutions to help them access formal finance.

In the first two years of the pilot, KIWASCO faced a high incidence of vandalism from other informal providers, like pushcart vendors who felt the DMM system threatened their livelihood. It took over two years to convince them that they could benefit from the partnership model through continued employment. Beginning in 2006, KIWASCO or master operators directly employed some of these informal players to manage water kiosks as kiosk operators, which reduced vandalism. These partnerships were established without structured contracts. KIWASCO set up and owned the kiosks to reduce the need for up-front investments by the kiosk operators. It also defined tariffs for kiosk operators to charge customers at USD 0.02 per 20-liter jerry can.[14]

Several development organizations provided support to KIWASCO to implement the pilot. The French Embassy in Kenya co-financed the project, and the Water and Sanitation Program (WSP)-Africa[15] provided KIWASCO with technical support to ensure the smooth implementation of the pilot program. KIWASCO also benefited from the support of local community leaders and committees within the LIAs, who helped increase the uptake of connections and address conflicts between operators and KIWASCO.

Between 2004 and 2008, 5,000 households in Nyalenda received safe, treated water from master operators. They paid significantly lower prices than what was previously charged by cartels and informal providers, which was ~10 times the price charged by utilities for their direct connections. The DMM tariffs were also lower than those paid by KIWASCO's direct piped customers (refer to Table 3), since KIWASCO only aimed to cover costs through the DMM.

[14] Amount calculated based on an exchange rate of 1 USD = 122.32 Kenyan Shilling.

[15] The WSP was a multi-donor partnership, part of the World Bank Group's Water Global Practice, supporting the poor in obtaining affordable, safe, and sustainable access to water and sanitation services. WSP-Africa assisted client countries in planning reforms, developing strategies, and implementing investment programs.

Table 3: Comparison of DMM and KIWASCO tariffs

Consumption Band	DMM Tariff (USD)	KIWASCO Direct Connection Tariff (USD)
0–6 m^3	1.47 flat rate for first 6 m^3	0.44 per m^3
7–20 m^3	0.29 per m^3	0.53 per m^3
21–60 m^3	0.41 per m^3	0.67 per m^3
Over 60 m^3	0.41 per m^3	0.80 per m^3

KIWASCO also benefited as its NRW rates dropped to 40% by 2008 (from 85% before 2004). Several local providers were formalized and began operating in Nyalenda legally.

5.1.2 SCALE-UP OF DMM TO SEVEN LIAS

Between 2008 and 2018, KIWASCO scaled up the DMM program and transitioned six more LIAs to managed markets. It partnered with 23 master operators and over 200 kiosk operators to deliver treated water provided by the utility to customers in these LIAs. KIWASCO continued the construction of pipes and bulk meters to deliver water to master and kiosk operators. These master and kiosk operators were responsible for operating the bulk meters, delivering water to households in the LIAs, and maintaining the systems within the LIAs.

As in the pilot phase, KIWASCO enforced quality and tariff standards through contracts signed with master operators that it could terminate in case of non-compliance. Tariffs set in the pilot phase were maintained during the scale-up.

In 2015, KIWASCO, with support from WSUP,[16] shifted the management of DMM to a pro-poor services department of the utility to streamline the oversight of master operators' operations and acquisition of new DMM customers. This department was primarily responsible for addressing customers' concerns across LIAs, increasing the number of DMM customers in each LIA, and overseeing the operations of the master operators.

Customers could call the department directly to raise their concerns regarding the service, such as tariffs charged by the master operators, leakages in the system, and water quality. The department appointed on-ground staff in the LIAs to liaise with the master operators and provide them with technical support to address these concerns. The department and WSUP also drafted a corporate marketing strategy to improve customer acquisition and coverage in the LIAs. As part of its marketing campaigns, the department set up "clinics" and tents in LIAs to raise awareness of the importance of consuming safe water. These were followed by door-to-door visits by department staff to help customers fill out connection forms. Community-level committees and local leaders acted as mediators between LIA residents and KIWASCO.

Additionally, the department collected monthly evaluation reports from the master operators to monitor service quality and carry out appraisals. It was also responsible for verifying the eligibility of master operators for license renewals. Further, it provided ad hoc training sessions for master operators to better manage their systems or customer transactions. This was based on the individual needs of each master operator, identified using the monthly reports. In collaboration with WSUP, the

[16] WSUP is a not-for-profit company that partners with utilities, municipalities, and the private sector to develop services, build infrastructure, and attract funding that will help provide water and sanitation services to low-income communities.

department provided items like laptops and computers for master operators to ensure smoother operations.

Coverage of the DMM increased from 5,000 households in one LIA in the pilot phase to approximately 20,000 households across the seven LIAs. The profitability of the master operators increased, as KIWASCO supplied water to them at cost (approximately USD 0.20 per m^3).

During this phase, KIWASCO's partner master and kiosk operators also included several women-led enterprises, as KIWASCO prioritized applications by women. This represented a significant shift from unregulated markets in which participation of women was low (given the risks associated with sourcing water informally). However, sustaining the increased participation was difficult as women ran the threat of being displaced by unemployed male relatives when their businesses achieved success under the DMM.

5.1.3 LIAS START RECEIVING WATER DIRECTLY FROM KIWASCO

Over time, new building developments came up along the outskirts of the LIAs. From 2018, KIWASCO started transitioning these areas to served markets by providing piped water directly to households. This was primarily done to meet the rising demand from the new building developments. KIWASCO built its own pipe networks to supply water and retained the displaced master operators for tasks such as bill collection and customer relations management. By 2022, KIWASCO had fully transitioned two growing LIAs to served markets. However, KIWASCO had to increase tariffs based on the Water Services Regulatory Board's (WASREB's) recommendation to equalize tariffs across the city.

5.1.4 KIWASCO'S PLANS FOR THE FUTURE

Today, the DMM program continues in five out of the seven LIAs. KIWASCO serves ~88% of Kisumu city's population through direct piped connections or the DMM. Its NRW rates have also dropped as low as 32%.

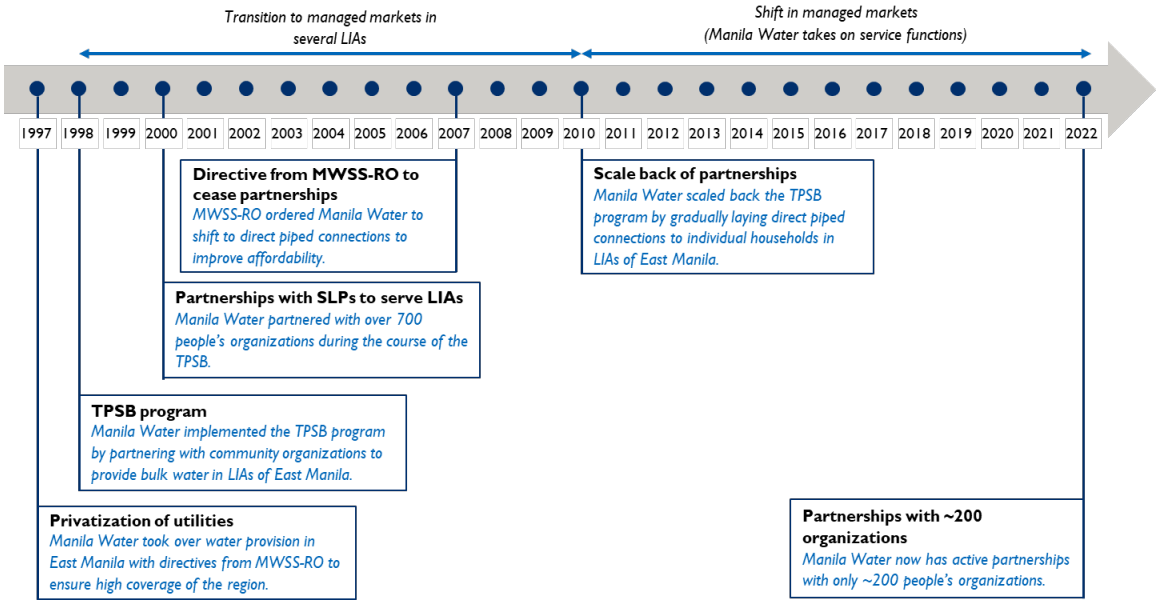
In the future, KIWASCO plans to provide direct piped connections as development continues in the other LIAs. KIWASCO is also identifying ways to avoid conflicts with the master operators currently serving the LIAs and considering implementing the DMM in new LIAs on the outskirts of Kisumu city to expand coverage of affordable and safe water within the city. The company is looking to move some master operators to these LIAs to serve the new DMM arrangements and is also exploring partnerships with master operators for sanitation projects similar to the DMM.

5.2 PARTNERSHIPS THROUGH MOUS WITH PEOPLE'S ORGANIZATIONS IN MANILA, PHILIPPINES (WATER)

Starting in 1998, Manila Water, the private concessionaire in East Manila, partnered with over 700 people's organizations in the LIAs. Under the partnership, Manila Water delivered treated utility water in bulk through piped networks up to the fringes of the LIAs, and the people's organizations delivered this water to the residents within the LIAs using their own pipe networks. As of 2014, the partnership had provided safe water to 1.70 million people, representing ~27% of the city's total population and ~73% of the population that did not have direct piped connections from Manila Water in 2014.

The private concessionaire, Maynilad, implemented a similar partnership model in West Manila. Since literature better documents the transitions in LIAs of East Manila, this case study focuses only on activities by Manila Water.

Figure 13: Timeline of transitions and activities in Manila, Philippines



5.2.1 TUBIG PARA SA BARANGAY PROGRAM BEGINS IN MANILA EAST, FORMALIZING PARTNERSHIPS WITH PEOPLE'S ORGANIZATIONS

Source: ESG

In 1997, the national government privatized public water utilities in Metro Manila, transitioning the served markets in the city to managed. However, unregulated micro-markets persisted in many LIAs of the city as the private utilities provided direct supply to only 70% of Metro Manila. These LIAs lacked access to safe and affordable water and had to rely on the illegal sale of water by local groups or individuals, who charged much higher rates than the utility's tariffs.

Privatization of Manila Water,[17] the utility in East Manila, came with high coverage targets from the regulatory authority, the Metropolitan Waterworks and Sewerage System Regulatory Office (MWSS-RO).[18] Executing this mandate meant expanding formal coverage of water supply in East Manila's LIAs. However, the lack of clear land tenure rights in LIAs affected Manila Water's ability to serve them directly. At the same time, Manila Water wanted to curb NRW rates that were as high as 65% in these areas.

In 1998, Manila Water introduced the *Tubig Para Sa Barangay* (TPSB) program, transitioning the unregulated LIAs in East Manila to managed markets to meet its coverage targets. Under the TPSB program, Manila Water partnered with hundreds of local community groups, termed people's organizations, to supply utility-provided treated water in bulk at affordable rates. Many of the people's organizations were already selling water in the LIAs. Manila Water was responsible for laying new pipelines to the edges of settlements to deliver treated utility water to the people's organizations and

[17] Manila Water is a private company that was awarded the concession to provide water supply services in East Manila.

[18] MWSS-RO is the regulatory authority that is mandated to monitor the concession agreements for the two private concessionaires in Manila. It enforces the tariff and service standards to which the concessionaires are expected to adhere.

installing bulk meters to monitor the volume of water that people's organizations received. The people's organizations were responsible for delivering water to households in LIAs by laying and maintaining pipe networks within the LIAs.

Manila Water partnered with people's organizations through an MoU. It selected people's organizations based on recommendations from territory managers, who it employed, after it received requests from the LIAs for water services in the settlements. These territory managers provided one-off training to people's organizations on setting up pipes within the LIAs and reading bulk meters. When people's organizations requested it, territory managers supported them in identifying leakages. The territory managers were also responsible for monitoring the quality of water in LIAs by collecting samples each month and sending them to laboratories across the city for quality checks. Manila Water also introduced pricing guidelines specifying that people's organizations were only allowed to charge customers up to 20% over the bill amount that Manila Water charged the people's organizations.

Between 1998 and 2010, Manila Water formalized and partnered with 700 people's organizations in LIAs in East Manila. Most of the people's organizations were successful women-led enterprises, owing to their networks among neighboring households and experience in managing water in their homes.

During this period, access to safe and reliable supply of water improved, with treated utility water delivered to over 1.70 million people under the TPSB program. The price for water supplied in LIAs reduced from USD 2.31–2.90 per m^3 in 1998 to ~USD 0.77 per m^3 after the implementation of the TPSB.[19] The viability of people's organizations also appeared to have improved. This was mainly due to reduced costs from not having to invest in water treatment, as they received treated water from Manila Water.

5.2.2 MANILA WATER PROVIDES DIRECT CONNECTIONS TO LIAS, SCALES BACK TPSB

Under the TPSB, residents of LIAs were paying lower prices than before but still higher than those being paid in higher-income areas. The TPSB prices were higher as high-volume customers (like people's organizations) were charged more per unit than low-volume customers. Customers also had complaints about the water supply, such as low water pressure.

The brewing discontent among residents of the LIAs boiled over into protests in the Taguig area of Manila between 2005 and 2008, during which customers demanded that Manila Water's tariffs be more equitable. In response, the regulator, MWSS-RO, directed Manila Water to begin providing direct connections to the LIAs in East Manila.

As the LIAs developed and land tenure rights were secured, Manila Water started scaling back the TPSB program in 2010 and laying direct piped connections to individual households in LIAs. The LIAs remained as managed markets, but with Manila Water providing last-mile delivery (instead of the people's organizations). It invested in innovations such as narrow pipe designs better suited to ensure last-mile delivery to households and the clustering of individual water meters at the edges of settlements. Since households had to pay a large up-front charge (equivalent to USD 160) to avail these direct connections, the government, in collaboration with the International Finance Corporation and the Asian Development Bank (ADB), introduced a financing facility for households.

This initiative successfully addressed affordability concerns as households now paid utility rates based on the volumes they consumed, which are significantly lower than the prices people's organizations were

[19] Average monthly bills after the implementation of the TPSB program were ~USD 10.36 for consumption between 10 and 17 m^3. Assuming an average consumption of 13.50 m^3 results in an average price of USD 0.77 per m^3.

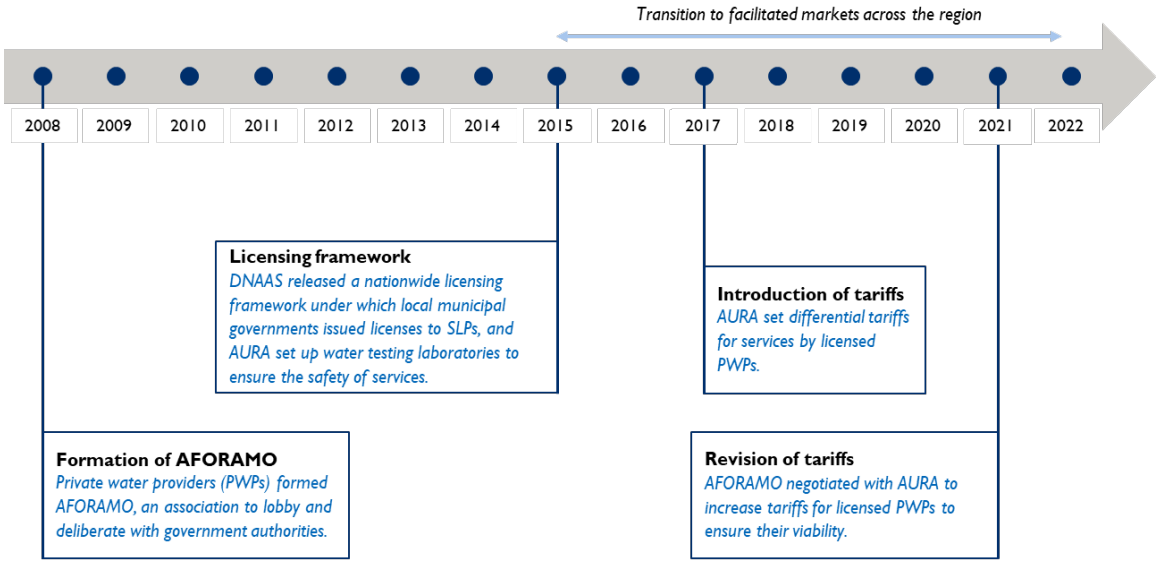
charging. The service quality also improved due to improvements in the pipe designs, which allowed for more reliable last-mile service delivery to households in the LIAs. However, Manila Water did not make any specific arrangements to manage the exits of the displaced people's organizations. Larger people's organizations were able to get business opportunities outside Metro Manila and plan to eventually move all operations to these regions. However, the future and livelihoods of smaller people's organizations remained uncertain.

Today, the partnerships have almost entirely ceased in East Manila, with only ~200 people's organizations remaining. Manila Water intends to provide direct connections to households in all LIAs in East Manila.

5.3 FORMALIZATION AND REGULATION OF PWPS THROUGH A PLAYER COLLECTIVE IN SOUTHERN MOZAMBIQUE (WATER)

Starting in 2015, several governmental and nongovernmental stakeholders in Mozambique implemented initiatives to formalize and regulate over 550 PWPs through engagement with a registered PWP collective. The initiatives included the introduction of a licensing framework with quality guidelines and a regulation on tariffs that SLPs charged. Today, these initiatives have improved the quality of water services households receive to a degree but have also led to an increase in the price paid for water.

Figure 14: Timeline of transitions and activities in southern Mozambique



5.3.1 PWPS PROLIFERATE IN AN UNREGULATED MARKET

Source: USAID 2020b

In 2015, southern Mozambique had low coverage of formal water provision, as the public utilities could cater to only half of the region's population of 5.80 million.[20] PWPs, also known as FPAs, served the rest, mostly households in peri-urban areas, in an unregulated manner.

PWPs began emerging on the outskirts of Maputo city in the 1980s to supply water to households left unserved by *Aguas da Região de Maputo* (ADRM),[21] the public utility. As the number of households they served soared over the years, PWPs grew in number and influence. These PWPs sourced water through boreholes and supplied it through small piped networks or standpipes installed near households. However, they lacked the legal authority to sell water, and public institutions had no oversight over the quality of water that these PWPs provided or the prices they charged. Lack of oversight over PWP services often led to territory encroachment conflicts with the public utilities.

5.3.2 PWPS COME TOGETHER TO FORM AFORAMO

From the late 2000s to the early 2010s, there was a growing sentiment among governmental actors in Mozambique to ban all PWPs. In response, PWPs in Maputo came together in 2008 to form *Associação de Fornecedores de Água de Moçambique* (AFORAMO), an association to collectively lobby and deliberate with government authorities for formal recognition of their businesses.

Eventually, government stakeholders realized that it was necessary to acknowledge the role of PWPs in addressing service gaps, given the lack of their own resources to extend coverage. Later that year, the PWPs registered AFORAMO as a legal entity in Maputo. The association's main function was to negotiate between PWPs and various governmental stakeholders to resolve disputes over territory encroachment (by water utilities) and prices charged to customers. It also conducted and shared studies and market information with the member PWPs. AFORAMO served as a single touchpoint for the public institution *Direcção Nacional de Abastecimento de Água e Saneamento* (DNAAS) to engage with PWPs.[22]

5.3.3 DNAAS INTRODUCES LICENSING FRAMEWORK

Around 800 PWPs were operating unregulated in southern Mozambique by 2015. In this year, DNAAS introduced a licensing framework for the PWPs. The local municipal governments transitioned regions across southern Mozambique to facilitated markets by issuing licenses under this framework. The transition aimed to increase oversight and control over PWPs' services, reduce conflicts, and improve revenue through licensing fees.

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20 Instituto Nacional de Estatística 2016.

21 ADRM is the state-owned utility responsible for the management and operation of the public water supply in Maputo Metropolitan Region, covering Maputo, Matola, Vila de Boane, and Marracuene.

22 DNAAS is a public institution in Mozambique, under the Ministry of Public Works, Housing, and Water Resources, responsible for water and sanitation supply policy development, planning, and investment mobilization in the sector.

DNAAS drafted the framework with support from the *Fundo de Investimento e Património do Abastecimento de Água* (FIPAG) and *Administracao de Infraestruturas de Agua e Saneamento* (AIAS).[23] Local municipal governments in southern Mozambique were responsible for using the framework to issue licenses to PWPs to sell water sourced via boreholes, levying licensing fees that ranged from USD 40 to USD 4,000, based on the PWP's scale of operations.[24] Once the licensing framework was introduced, DNAAS liaised with AFORAMO and organized workshops to guide PWPs through the application process. The association also helped DNAAS with geographic information system (GIS) mapping of PWP water systems to track licensing status and existing technical capacities (i.e., the number of households served and the quality of water supplied).

The national regulator, *Autoridade Reguladora de Água* (AURA), was responsible for monitoring the quality of water supplied by PWPs.[25] It collaborated with AFORAMO to form small teams for on-the-ground monitoring of the quality of water supplied and of the equipment used. AURA set up water testing laboratories across the region to ensure PWPs' compliance with quality standards, although PWPs had to pay for the testing services themselves. In case of non-compliance, AFORAMO members were fined and disbarred from the collective.

Several international development organizations played a supporting role during this transition. The licensing framework for PWPs was drafted with support from the USAID Sustainable Water and Sanitation in Africa (SUWASA) Project,[26] and the USAID Supporting the Policy Environment for Economic Development (SPEED+) Project[27] prepared guidance manuals to distribute to PWPs at workshops conducted on the licensing process. Furthermore, USAID Water, Sanitation, and Hygiene Finance Activity (WASH-FIN) [28] partnered with AFORAMO to provide training to PWPs to improve their technical and financial skills to manage their pumping systems and business operations, and to support PWPs in loan application processes.

As a result of the transition, hundreds of PWPs gained the legal authority to sell water. Households in peri-urban areas gained access to safer water supply due to AURA's and AFORAMO's increased testing of water, and the utilities in each city (e.g., ADRM in Maputo) generated revenue by levying licensing fees. Many women-led enterprises secured licenses during this phase, but they still struggled to balance household expectations and the time required for attending workshops and participating in capacity-building initiatives.

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23 FIPAG and AIAS are the asset owners overseeing investment in and maintenance of public water supply networks across cities of various sizes in Mozambique. FIPAG manages investment in and maintenance of the public water supply networks in 21 cities across Mozambique. AIAS oversees investment in and maintenance of public water supply networks in over 120 smaller cities and towns.

24 Mozambique had three classes of licensing fees: ~USD 40 for PWPs serving under 500 households, ~USD 80 for PWPs serving between 500 and 5,000 households, and ~USD 4,000 for PWPs serving over 5,000 households.

25 AURA is an autonomous public body responsible for regulating and monitoring the quality of water and sanitation services in the country.

26 USAID SUWASA aimed to improve access to safe, reliable, affordable, and sustainable water and sanitation services for unserved and underserved urban populations in Sub-Saharan Africa.

27 USAID SPEED+ provided expert technical assistance and training for public sector institutions and civil society organizations at the national and local levels.

28 USAID WASH-FIN works toward closing financing gaps to achieve universal access to water and sanitation services.

5.3.4 TARIFFS ARE INTRODUCED AND THEN REVISED

In 2017, AURA introduced a tariff regulation to have greater control over the affordability of water supplied by PWPs. It collaborated with AFORAMO to monitor the tariffs through regular on-the-ground inspections.[29]

The initial tariffs were based on the source of electricity (USD 0.78 per m^3 for PWPs connected to the grid and USD 0.94 per m^3 for PWPs not connected to the grid).[30] Higher tariffs were set for PWPs not connected to the national grid to compensate for higher costs incurred in sourcing energy for pumping water. This briefly improved affordability for customers who were paying ~USD 1.00 per m^3 of water before the introduction of the tariffs.

However, several conflicts arose, beginning in 2017, between PWPs and AURA over the viability of the tariffs, which eventually led to the redesign of the tariffs in 2021. After several negotiations between AURA and AFORAMO, tariffs were increased to USD 1.10 per m^3 of water for PWPs connected to the electricity grid and USD 1.25 per m^3 of water for PWPs not connected to the grid. The new tariffs were higher than the price charged by PWPs before the introduction of the tariffs and by utilities for piped water across Mozambique, which ranged from USD 0.44–USD 0.70 per m^3.

5.3.5 SOUTHERN MOZAMBIQUE TODAY

Today, there are ~550 licensed PWPs serving peri-urban areas in southern Mozambique. As PWPs continue to be licensed, governmental actors can exercise greater control over the quality of water supplied and the prices that they charge.

In the future, DNAAS, AURA, and other authorities seek to continue collaborations with PWPs. They are also experimenting with new forms of partnerships, with PWPs managing the operations of water utilities in a few geographies. Additionally, they are focusing on building the capacity of PWPs through mandated training programs to improve their business operations.

5.4 FORMALIZATION AND TARGET MARKET ALLOCATION FOR VTOS AND GULPER ENTREPRENEURS IN KAMPALA, UGANDA (FSM)

Starting in 2016, KCCA[31] formalized over 100 VTOs and Gulper entrepreneurs across LIAs in Kampala by providing membership to an emptiers' association and assigning legal status to their companies. It also partnered with 11 VTOs and Gulper entrepreneurs through SLAs, assigned them territories, set up an FSM call center, and provided subsidies to socio-economically vulnerable households across LIAs. As of 2021, the partnership model has provided safe and affordable emptying services to 39,151 customers, representing ~1% of both the city's total population and the population that was not connected to sewerage networks.[32]

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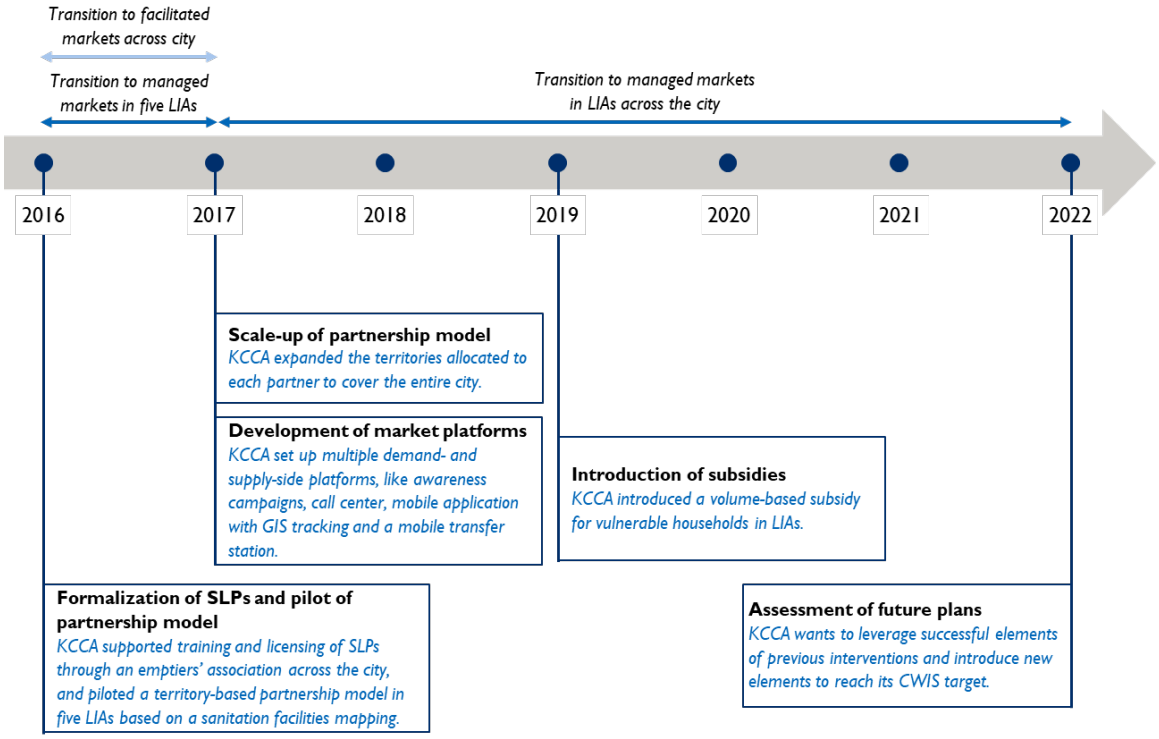
29 Mechanisms by local municipal governments to implement the tariff regulation and manage SLPs' pricing on-ground (other than self-regulation by AFORAMO) were not cited in the desk research.

30 Amount calculated based on an exchange rate of 1 USD = 63.85 Mozambican Metical.

31 KCCA is the city service authority established in 2011 with the mandate to regulate and plan the sanitation sector.

32 Low coverage of sewerage networks—8%—implied that the proportion of unserved population was similar to the total population.

Figure 15: Timeline of transitions and activities in Kampala, Uganda



5.4.1 SLPS FORMALIZED, PARTNERSHIP MODEL PILOTED IN FIVE PARISHES UNDER KAMPALA FECAL SLUDGE MANAGEMENT PROGRAM

In 2016, KCCA provided FSM services only to institutional customers. Limited budget allocation for sanitation from the Ugandan government prevented it from expanding service coverage.[33] Households in relatively affluent areas of the city accessed safe FSM services through informal private VTOs[34] and Gulper entrepreneurs. The latter were manual emptiers trained and equipped with Gulpers by Water for People (WFP).[35] However, households in LIAs primarily relied on informal manual emptiers for FSM services. This was because VTOs could not access households in dense, informal settlements and because the services of VTOs and Gulper entrepreneurs were less affordable than manual emptying.

To address these challenges and increase control over informal service providers, KCCA transitioned Kampala city in 2016 to a facilitated market by forming an emptiers' association, and supporting formalization and capacity-building through the association. They also transitioned five LIAs (or parishes) to managed markets by setting up a partnership model with formalized emptiers.

There were already two associations of VTOs and Gulper entrepreneurs by 2017, but they had not engaged closely with KCCA because they perceived it as competition in serving households. In

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[33] KIIs indicate that budget cuts further impeded KCCA's ability to expand service coverage, but precise data on the timeframe of the budget cuts is not available.

[34] VTOs refer to private players who own and operate vacuum trucks to mechanically empty pits and septic tanks in Kampala.

[35] WFP is a global nonprofit working across nine countries in Latin America, Asia, and Africa to address the global water crisis and equip communities with lasting access to clean water and sanitation services.

collaboration with WFP, KCCA facilitated the formation of a unified emptiers' association, gradually building trust and actively encouraging emptiers (including those who were members of the pre-existing associations) to join the association.

Similarly, a licensing framework had existed in Uganda since 1999. The Kampala Fecal Sludge Management (KFSM) program streamlined the formalization process for FSM service providers and supported ~100 VTOs and Gulper entrepreneurs in Kampala to formalize. This entailed gaining membership to the emptiers' association through an MoU, followed by company incorporation to assign legal status to the business, and finally obtaining licenses for FSM service provision and fecal sludge transportation. Additionally, KCCA liaised with the emptiers' association to provide VTOs and Gulper entrepreneurs with technical, financial, and business training. It conducted regular training sessions on eight modules, including finance, occupational health and safety, and service documentation, for which attendance was mandatory to obtain licenses.

From 2016 to 2017, KCCA also piloted a partnership model under the KFSM program to engage 10 licensed Gulper entrepreneurs and VTOs to provide safe emptying services in five parishes under SLAs. KCCA divided the targeted LIAs into five zones based on a sanitation facility mapping and allocated specific territories within the five zones to the private emptiers. The program used a centralized tendering process to select these partners, and SLAs defined quality requirements and allocated territories. The VTOs and Gulper entrepreneurs provided emptying services to customers within their allocated territories using their own equipment (i.e., vacuum trucks and Gulpers).

Several governmental and nongovernmental actors played critical roles in this transition. The National Environment Management Authority (NEMA)[36] regulated fecal sludge disposal and was responsible for issuing transportation licenses to association members in collaboration with KCCA. The National Water and Sewerage Corporation (NWSC),[37] the national utility, built and operated treatment facilities for safe disposal by the emptiers. The Ministry of Water and Environment promoted private sector participation in sanitation at the national level to support KCCA.[38] The emptiers' association was responsible for holding training sessions and self-regulating members' compliance with safety standards. Several external funders, including *Deutsche Gesellschaft für Internationale Zusammenarbeit* GmbH (German International Development Agency [GIZ]) and the Bill and Melinda Gates Foundation (BMGF),[39] [40] infused funds to support KCCA's activities.

Under the KFSM, KCCA was able to provide households with better access to safe emptying services by training VTOs and Gulper entrepreneurs and allocating them to specific LIAs. VTOs and Gulpers were able to formalize and acquire new customers in LIAs. Anecdotal evidence indicates that at least some SLPs also gained technical, financial, and business skills from the trainings.

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36 NEMA is the national environment regulation authority in Uganda responsible for regulating waste transportation and disposal, including licensing of operators.

37 NWSC is the national utility operating under the Ministry of Water and Environment responsible for building and maintaining treatment facilities.

38 The Ministry of Water and Environment is a cabinet-level government ministry of Uganda responsible for the management and sustainable utilization of water and environment resources for the population of Uganda.

39 GIZ GmbH is an international development agency that the German Federal Government owns, operating in Uganda since 1964 with a focus on WASH, renewable energy, and agricultural rural finance.

40 BMGF is a non-profit foundation that provides direct support to eight cities across Sub-Saharan Africa and South Asia to redesign their urban sanitation service systems under the Citywide Inclusive Sanitation (CWIS) initiative.

Additionally, KCCA was cognizant of the limited participation of women-led businesses in formal service provision and started closely engaging with women emptiers to increase their participation in the emptiers' association and the broader sector. However, manual emptiers faced barriers to participation. Manual emptying was illegal in Kampala, attracting a penalty for manual emptiers and the households using their services. KCCA attempted to engage with manual emptiers and upskill them to deliver safer services through Gulper training programs, but the fear of penalties reduced manual emptiers' incentive to self-identify and come forward for such initiatives.

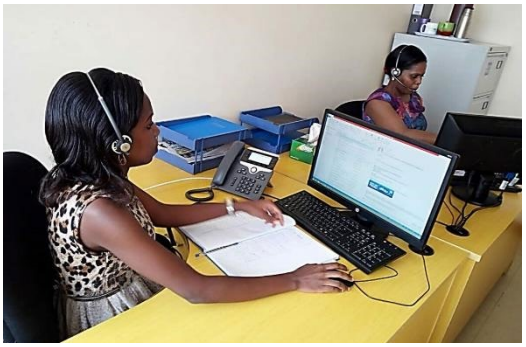
5.4.2 KFSM PARTNERSHIP MODEL IS SCALED UP TO ALL LIAS

Between 2017 and 2019, the KFSM partnership model was scaled up across all LIAs in Kampala to expand formal coverage of safe emptying services. This led to all the LIAs transitioning to managed markets. KCCA engaged 10[41] licensed emptiers through SLAs to serve these areas. The partnered emptiers marketed their business and served customers independently within their allocated regions.

The emptiers' association self-regulated members' compliance with safety standards, but KCCA also set up other initiatives to improve the quality of the partners' services. It leveraged GIS tracking to monitor the emptying and disposal of fecal sludge. It also piloted a mobile transfer station in collaboration with WFP to reduce the burden of high costs incurred by emptiers in transporting sludge to fecal sludge treatment plants.

5.4.3 KCCA SETS UP A CALL CENTER

The licensed emptiers contracted by KCCA faced competition from informal manual emptiers across LIAs. In a bid to boost and streamline demand for "formal" services and to support licensed SLPs, KCCA leveraged several new platforms. It carried out an awareness campaign called "Weyonje" and set up a call center in 2017.



Source: KCCA n.d.

The call center coordinated emptying requests for emptiers and processed customer feedback on the prices charged and service quality. Households used a toll-free number to raise emptying requests. Operators then connected them to private VTOs or Gulpers registered with KCCA based on the containment site location and the preferred price point. The emptiers and the households independently negotiated prices once the emptier reached the site for emptying. Through the call center, KCCA collected information about the actual amount households paid, the volume of sludge collected, and the number of pits emptied by each emptier. It was also able to track where emptiers disposed of the sludge, thus reducing the incidence of illicit dumping in the city.

The call center helped to increase access to safe emptying services in the city, with 1,451 toilet facilities emptied through the call center within the first 13 months of operation. The reliability and quality of services also appeared to improve. For example, a 2018 KCCA study found that 80% of the customers that raised emptying service requests through the call center testified that they received the requested

[41] It is unclear whether the 10 providers engaged in the scale up of the KFSM partnership model included those engaged during the pilot phase.

service, of which 90% graded the service as "Excellent." Emptiers also reported improved monthly income due to an increase in the number of emptying requests received through the call center. This incentivized other private emptiers to register with the association.

5.4.4 KCCA INTRODUCES SUBSIDIES TO ADDRESS THE AFFORDABILITY BARRIER IN SOME AREAS

In 2019, KCCA introduced a subsidy for socio-economically vulnerable households identified by community volunteers in all LIAs under the CWIS program. KCCA built on the existing partnership model, engaging 11[42] licensed association members to provide subsidized emptying services to address affordability concerns in LIAs. Meanwhile, it continued implementing licensing regulations introduced under the KFSM program.

KCCA invited applications via a tender advertised through the emptiers' association and selected emptiers through a competitive bidding process. It issued contracts to the selected emptiers and allocated territories to carry out safe emptying services at subsidized rates through a voucher system. KCCA gradually increased the subsidy amount as a proportion of the total volume emptied. By 2022, households were eligible for 50% of the cost of emptying using a cesspool truck of 4 m^3 capacity. The price per m^3 of sludge emptied had already reduced from ~USD 9.05 before the start of the KFSM program to ~USD 6.70.[43] The subsidy model further reduced the price households paid to ~USD 4.02.[44] By November 2021, 3,254 households had been served under the subsidy model.

KCCA also introduced a customer-facing mobile application to coordinate emptying requests. This allowed households to raise a request for emptying, which was then broadcast to all the emptiers registered on the platform. The emptiers accepted the request based on the initial price quoted and the location of the site. The call center ran in parallel for households without access to a smartphone and served areas facing network connectivity issues. The use of both these platforms to monitor services improved emptiers' compliance with disposal standards. For example, 87% of customers (of a 2020 survey of 208 customers) indicated a reduction in the illicit disposal of fecal sludge in their communities through the programs.

5.4.5 KCCA'S PLANS FOR THE FUTURE

KCCA served ~39,151[45] customers under the KFSM and CWIS programs by November 2021. Today, KCCA continues to provide safe services across Kampala in partnership with private players. In the future, it intends to continue leveraging successful elements from previously tested models such as subsidies, the call center, and the mobile application. KCCA also wants to introduce new elements like scheduled desludging to achieve its CWIS target of 80% safely managed services by 2025. However, it anticipates that it will be unable to incorporate all VTOs and Gulpers entrepreneurs in the market through this model, leading to a risk of future displacement for formalized emptiers. While KCCA has

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42 It is unclear whether the 11 providers engaged in the CWIS partnership model included those engaged in the previous phases.

43 Amount calculated based on an exchange rate of 1 USD = 3,731.34 Ugandan Shilling.

44 For the subsidy model, the price charged for one trip with a cesspool truck of 4 m^3 capacity was ~USD 32.16. The subsidy covered 50% of this cost while households were responsible for the rest. Assuming that households emptied 4 m^3 of sludge in one trip, the final price households paid was ~USD 16.08—amounting to ~USD 4.02 per m^3 of sludge emptied.

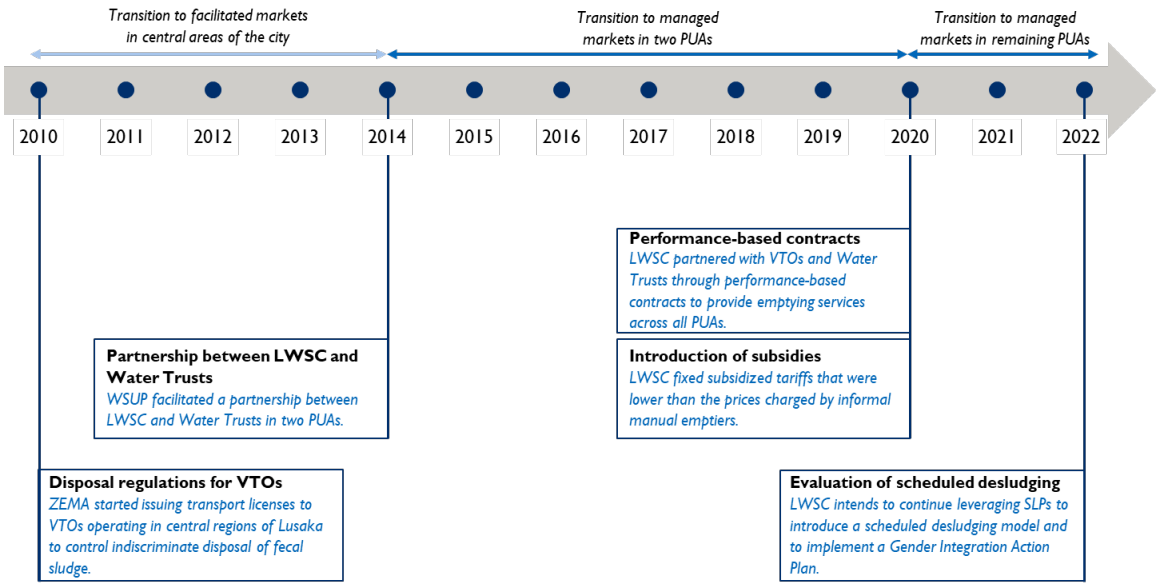
45 Population served from 2017 to 2020 is extrapolated based on KCCA figures for population served through the FSM call center in 2017, and data from 2020 to 2021 is based on population served under the subsidy model.

observed marginal improvement in the participation of women, it plans to execute measures laid out in a Gender Integration Action Plan to address persistent barriers women face in the sector. KCCA is also grappling with sustainable financing of its initiatives and is weighing short- and long-term options such as sanitation levies, government funding, and grant funding.

5.5 LICENSING AND PERFORMANCE-BASED CONTRACTS FOR VTOS AND WATER TRUSTS IN LUSAKA, ZAMBIA (FSM)

Starting in 2010, LWSC and other stakeholders implemented initiatives to regulate and contract VTOs and manual emptiers across the city. This included issuing transport licenses to VTOs in central Lusaka and setting up performance-based contracts (with subsidized pricing) with five VTOs and two Water Trusts in peri-urban areas. As of 2021, these initiatives had expanded coverage of safe and affordable emptying services to 58,410 customers, representing ~2% of both the city's total population and the population not connected to sewerage networks.[46]

Figure 16: Timeline of transitions and activities in Lusaka, Zambia



5.5.1 DISPOSAL REGULATIONS INTRODUCED FOR VTOS

In 2010, over 70% of the population living in unplanned settlements in Lusaka's peri-urban areas lacked access to mechanical emptying of fecal sludge. Even if mechanical emptying services were available, households in peri-urban areas had a low willingness-to-pay for them. Moreover, the durability of pit latrines was poor, and they were prone to collapsing from the pressure that vacuum trucks exerted. Due to these factors, there was a high prevalence of cheaper, unsafe manual emptying in these settlements, leading to frequent cholera outbreaks. In the relatively more affluent areas of central Lusaka, private VTOs provided mechanical emptying services but disposed of the sludge indiscriminately.

[46] Low coverage of sewerage networks—16%—implied that the proportion of unserved population was similar to the total population.

In 2010, Zambia Environmental Management Agency (ZEMA),[47] the national environmental regulator, transitioned the middle- and high-income areas of central Lusaka to facilitated markets by issuing FSM transport licenses to the VTOs for the safe disposal of sludge at designated fecal sludge treatment plants.

5.5.2 LWSC AND WATER TRUSTS PARTNER IN TWO PERI-URBAN AREAS

Source: Sperandeo and Srinivasan 2020

By 2014, the national regulator, the National Water Supply and Sanitation Council (NWASCO),[48] expanded the mandate of the utility, LWSC,[49] from operating treatment facilities to also providing safe FSM services. However, LWSC did not have the financial resources to fulfill the expanded mandate.

In 2014, LWSC transitioned two peri-urban areas, Kanyama and Chazanga, to managed markets by introducing formal emptying services. LWSC partnered with two Water Trusts,[50] who engaged informal manual emptiers for last-mile service delivery in these two areas, through MoUs.

LWSC identified Water Trusts as potential partners for formal emptying because of their prior partnership for water supply provision in LIAs and their capabilities. The Water Trusts had been formally providing water services in Kanyama and Chazanga peri-urban areas in partnership with LWSC and therefore had an existing customer base there. They also had greater financial and managerial capacity than informal manual emptiers operating in these areas. The Water Trusts had to engage manual emptiers as most of the population used pit latrines, which vacuum trucks could not empty. Historically, manual emptiers faced social stigma and had to carry out emptying late at night, typically without gloves or personal protective equipment. WSUP identified ~18 informal manual emptiers and supported them in performing safer manual emptying. This involved training them in occupational health and safety and providing them with protective gear and improved emptying equipment (e.g., forks to remove solid waste and scoops to remove fecal sludge).

LWSC set fixed prices for services delivered through the Water Trusts, which paid the manual emptiers a commission on each job. With support from the Stone Family Foundation[51] and Comic Relief,[52] LWSC also set up treatment facilities in the two peri-urban areas to facilitate safe disposal.

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47 ZEMA is a national environmental regulatory authority in Zambia responsible for ensuring compliance with effluent discharge standards and the quality of bio-solids.

48 NWSC is the national regulator for commercial utilities in Zambia.

49 LWSC is the regional utility of Lusaka Province with a mandate of sanitation provision across all parts of the value chain, from emptying to re-use.

50 Water Trusts are formal CBOs that are delegated providers of water and sanitation services on behalf of LWSC in specific zones.

51 The Stone Family Foundation, established in 2005, focuses on improving access to water for households in Asia and Africa using market-based solutions.

52 Comic Relief is a charity founded in 1985 focusing on poverty alleviation, equity, and climate change.

The Water Trusts, however, faced low demand in the peri-urban areas, as the average price per m^3 they charged was more than double the price informal manual emptiers charged in unregulated peri-urban areas (~USD 22.84, compared to ~USD 10.88).[53]

5.5.3 PARTNERSHIP SCALED UP TO ALL PERI-URBAN AREAS THROUGH PERFORMANCE-BASED CONTRACTS

From 2020 onward, LWSC began expanding formal FSM coverage across all peri-urban areas in the city under the Lusaka Sanitation Program (LSP). It issued performance-based contracts to seven entities (five VTOs, and the Kanyama and Chazanga Water Trusts with ~18 manual emptiers) for the provision of emptying services in these areas, transitioning them to managed markets.

To select the service providers, LWSC circulated a public tender through media channels and an emptiers' association (whose formation it facilitated). It undertook competitive selection in tranches: one for manual emptying only and another for manual or mechanical emptying. The eligibility criteria for bidding included having company registration, an operating license from ZEMA, and tax registration. The criteria excluded most informal manual emptiers from participating.

At the end of the selection process, LWSC signed a performance-based contract with VTOs and the Water Trusts meeting the eligibility criteria. This contract involved subsidized emptying for customers, offset by a payment from LWSC to the private players after verifying 14 KPIs across three categories—occupational health and safety, customer management, and public safety during collection and transport. The LWSC also provided the VTOs with protective gear and tools for safer manual emptying, which they often had to do for households with unlined pit latrines in peri-urban areas.

LWSC's subsidized price was USD 9.02 per m^3 emptied, which was lower than the price informal manual emptiers charged (~USD 10.88 per m^3). It established this price based on a market survey, intending to undercut prices informal manual emptiers charged. The World Bank provided funding to LWSC for this subsidy.

The KPIs of the performance-based contract included metrics for safe emptying and disposal practices, such as the disposal of sludge at designated facilities by paying a disposal fee. LWSC contracted a third-party agency to verify self-reported metrics for service quality the VTOs and Water Trusts submitted.

The scale-up phase improved the affordability of safe services through the subsidy model and the quality of services through the enforcement of performance-based contracts. Coverage of formal emptying services also improved due to territory allocation through contracts and because the subsidy led to increased demand. By 2017, 1,788 households had been served under the partnership model between LWSC and the Water Trusts. This rose by another 9,000 households by 2021 under the subsidy model.

5.5.4 LUSAKA TODAY

LWSC served ~58,410[54] customers through the partnership models implemented under the LSP by November 2021. In the future, the utility intends to continue partnering with private players to introduce a scheduled desludging model. It also plans to continue subsidizing services for households but is evaluating models that would allow it to do so without grant funding. In addition, by implementing

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[53] Amount calculated based on an exchange rate of 1 USD = 16.63 Zambian Kwacha.

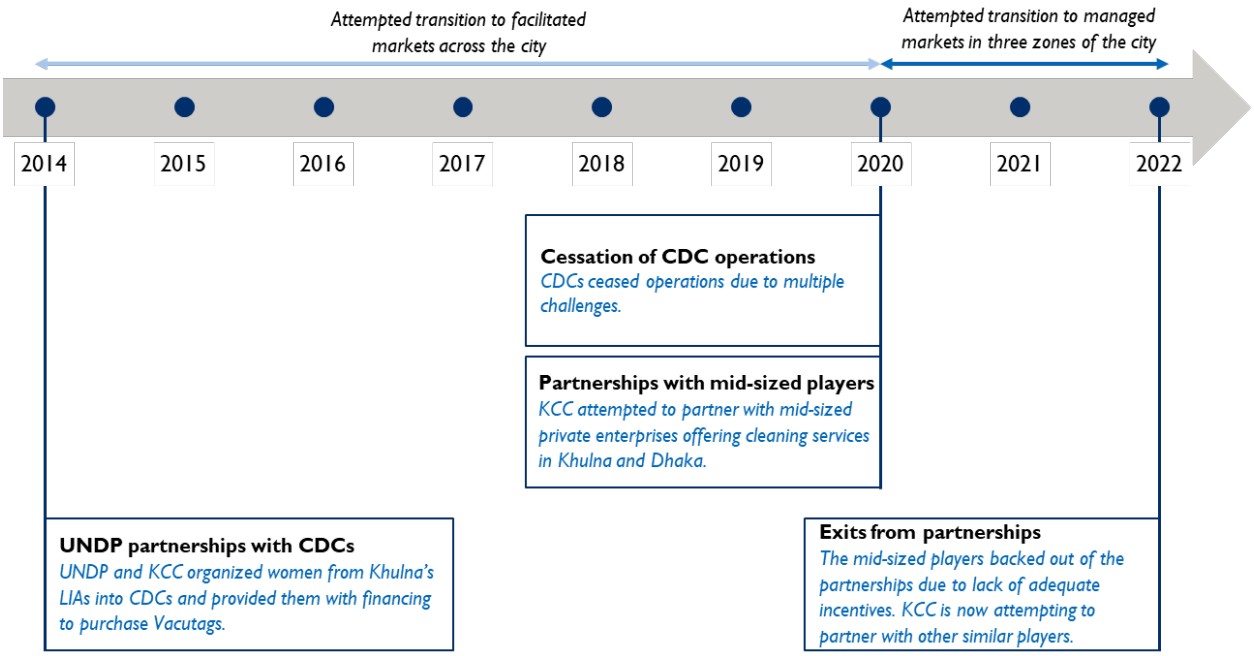
[54] Customers served from 2018 to 2019 is extrapolated based on population served by the Chazanga and Kanyama Water Trusts until 2017, and data from 2019 to 2021 is based on population served under the subsidy model.

strategies laid out in its Gender Integration Action Plan, LWSC aims to institutionalize gender inclusion in the FSM sector.

5.6 INCOMPLETE PARTNERSHIP ATTEMPTS WITH VARIOUS PROVIDERS IN KHULNA, BANGLADESH (FSM)

Starting in 2014, Khulna City Corporation (KCC) attempted several unsuccessful initiatives to leverage SLPs or mid-sized private players to provide safe emptying services to households in the city. KCC provided funds to community development committees (CDCs), women's collectives from Khulna's LIAs, to purchase Vacutags[55] for safe mechanical emptying. However, CDCs faced low demand for their services and lacked the skills to manage their businesses, eventually leading to the cessation of operations. KCC also attempted to partner with private mid-sized Vacutag operators to provide safe emptying in three out of four zones in Khulna. This initiative, too, was unsuccessful as the operators backed out of the partnership, citing low demand and low viability given the tariffs that KCC set.

Figure 17: Timeline of transitions and activities in Khulna, Bangladesh



[55] Vacutags are portable machines used to mechanically empty and transport fecal sludge in high-density areas that are inaccessible by traditional vacuum trucks.

5.6.1 FORMALIZATION OF CDCS FROM THE HARIJAN COMMUNITY

Source: SNV 2020

In 2014, over 80% of households in Khulna were opting for unsafe manual emptying. Illegal manual emptiers provided affordable services and dominated the market since KCC's[56] vacuum trucks could not enter the narrow roads in the city's LIAs. Despite this reliance on their services, manual emptiers faced social and caste-based stigma linked to their work and were denied access to public spaces and alternative jobs.

In 2014, by providing safe mechanical emptying services, KCC attempted to transition specific zones in Khulna to facilitated markets. KCC formalized and partnered with CDCs, which were women's collectives from Khulna's LIAs, to provide mechanical emptying services. The United Nations Development Programme's (UNDP's)[57] Urban Partnerships for Poverty Reduction (UPPR) program[58] created these CDCs.

KCC, in partnership with UNDP and *Stichting Nederlandse Vrijwilligers* (SNV) Netherlands Development Organization,[59] set up seed funds to provide the selected CDCs with loans to purchase Vacutags for safe mechanical emptying. It also connected the CDCs to treatment infrastructure. Meanwhile, SNV supported CDC businesses by providing training on business and financial skills and through some demand-generation activities, such as door-to-door campaigns. The women-led CDCs carried out mechanical emptying in the target zones using the Vacutags.

5.6.2 CDCS FACE MULTIPLE HURDLES, CEASE OPERATIONS

Social norms in Khulna prevented women from entering households to perform emptying services themselves. This became a major hurdle, and the CDC's work was subsequently limited to administrative functions. As a result, they had to deal with the high-cost burden of hiring additional emptying personnel.

There was also low demand for CDCs' emptying services, as households preferred manual emptying, which was cheaper and easier to access. This affected the viability of the CDCs, which were unable to earn enough revenue. As a result, the CDCs grappled with a lack of financial resources to repair and maintain the Vacutags.

Moreover, CDCs faced difficulties in managing emptying operations as they did not have prior experience and skills in the sector. Despite training initiatives focusing on building CDCs' business skills, KCC believed they did not address CDCs' capacity gaps in operating and maintaining Vacutags or running the business.

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56 KCC is the local city corporation in Khulna with the mandate to deliver non-sewered sanitation.

57 UNDP is the United Nations' lead agency working in 170 countries and territories to eradicate poverty and reduce inequality with a focus on three areas: sustainable development, democratic governance and peace building, and climate and disaster resilience.

58 The UPPR program, implemented between March 2008 and August 2015, was the largest urban poverty reduction program in Bangladesh. CDCs were set up under the UPPR program to empower marginalized women through skills training and revenue generation activities like running small businesses.

59 SNV Netherlands Development Organization is a not-for-profit international development organization established in the Netherlands in 1965, aiming to alleviate poverty and improve access to basic services.

The attempt to expand coverage of safe emptying services eventually failed, with CDCs ceasing to provide emptying services in 2020.

5.6.3 KCC PARTNERS WITH PRIVATE VACUTAG OPERATORS

In 2020, KCC attempted another transition (to managed markets) in three of Khulna's four zones by partnering with private Vacutag operators.

The Vacutag operators were mid-sized private enterprises that offered cleaning services in Khulna and Dhaka. They already owned Vacutags for their businesses and possessed the technical capacity to perform safe emptying services using them.

KCC invited bids through a publicly advertised tender. It then selected partners using a competitive ranking of bids based on objective criteria, such as the proposed royalty to be paid to KCC, years of experience, and asset ownership. Following the selection process, KCC made the Vacutag operators sign contracts specifying tariffs and target markets in three of the city's four zones. KCC was to serve the fourth zone. It defined differential tariffs based on the type of customer—residential customers in slums were charged less than those in non-slum areas, while institutional customers were charged even higher rates.

5.6.4 VACUTAG OPERATORS EXIT PARTNERSHIPS WITH KCC

The tariffs set by KCC for carrying out mechanical emptying services were too low to ensure profitability for the Vacutag operators. A few operators were already active in Dhaka and had experienced increased demand and revenue through branding and marketing efforts under WSUP's SWEEP program in Dhaka.[60] Without such planned demand activation activities by KCC in Khulna, the operators believed that the markets allocated to them under the partnership were too small to serve viably. Ultimately, failure to balance the right incentives for the Vacutag operators with achieving KCC's mandate resulted in the private players backing out of the partnership in 2022, even before operations began.

5.7 SCHEDULED DESLUDGING WITH A MID-SIZED PRIVATE PROVIDER IN SINNAR, INDIA (FSM)

Starting in 2019, Sinnar Municipal Council (SMC) partnered with a mid-sized private player for a scheduled desludging model under a performance-based contract. As of today, the scheduled desludging model has provided safe and affordable emptying services to 80% of the city's population in 2022.

The study team developed this targeted caselet to understand the scheduled desludging model in Sinnar, India, even though it did not involve an SLP. The primary goal was to study this model's design and implementation. Details on the timelines, actors, and broader enabling factors are not captured for the caselet.

[60] WSUP established a public-private partnership model in Dhaka wherein contracted partners would serve customers while operating under a common brand called "SWEEP." The promotional and marketing strategy for the SWEEP brand included an SMS, video, leaflet, and poster campaign promoting the brand and the hiring of "brand promoters" to conduct door-to-door visits in target areas.

5.7.1 IMPLEMENTATION OF SCHEDULED DESLUDGING IN SINNAR, INDIA

In 2019, there was a dearth of services for planned emptying and safe disposal of fecal sludge in Sinnar. The SMC [61] sought a private partner to carry out the scheduled desludging of septic tanks across the town to address this.

In March 2019, SMC transitioned Sinnar to a managed market by partnering with a mid-sized private player, Sumeet Facilities, to provide FSM services across the town. Sumeet Facilities is a national-level provider of various facility management services, with its operations base in a city near Sinnar. While it previously had provided various services, such as solid waste management, it does not appear to have undertaken FSM services before 2019.

SMC selected Sumeet Facilities through a competitive, web-based government tendering process. Sumeet Facilities was selected as it met the technical and financial criteria required for the partnership. SMC and Sumeet Facilities signed a performance-based contract for three years. This contract divided Sinnar into three zones, with all customers in a single zone being served by the company over a one-year period before moving on to the next zone in the following year. Sumeet Facilities was responsible for meeting monthly targets of carrying out desludging for households (which was done in coordination with SMC). Sumeet Facilities planned routes to optimize truck utilization and minimize transportation costs while ensuring sufficient coverage. It also had to bear all up-front capital and operational costs, including purchasing vacuum trucks. The Centre for Environmental Planning and Technology (CEPT) [62] University provided technical support to SMC in implementing the scheduled desludging model.

SMC charged customers a fixed annual sanitation tax[63] as part of their property tax to fund the desludging services. It deposited this amount in an escrow account set up under a tripartite agreement between the SMC, the provider, and a local bank. From this account, Sumeet Facilities received a monthly payment if it met coverage and quality standard targets. SMC maintained three months' payment in the escrow account to protect against delayed payments. The price for each tank emptied dropped from USD 14.69 (before the transition) to USD 9.80 (charged by Sumeet Facilities) once the model was implemented.[64]

Source: CEPT University

SMC built a fecal sludge treatment plant where the company's truck operators could dispose of sludge safely for adherence to the quality standards detailed in the service contract. It also created a mobile application, SaniTab, to maintain a database of all septic tanks, track the performance of the provider, and collect customer feedback. Further, to improve coverage across the town, SMC carried out awareness activities in the form of door-to-door drives and media campaigns to explain the service process and its importance in ensuring safe FSM practices.

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61 SMC is the local authority responsible for supplying water and sewerage services in Sinnar town. It is also authorized to build roads and impose taxes within its jurisdiction.

62 CEPT University focuses on understanding, designing, planning, constructing, and managing human habitats. It also takes on advisory projects to improve living conditions in India's villages, towns, and cities.

63 The exact amount of the tax charged to the customer was unavailable for the caselet.

64 Amount calculated based on an exchange rate of 1 USD = 81.67 Indian Rupees.

The sanitation tax improved affordability, especially for lower-income households. Since the sanitation tax was paid as a part of the overall property tax, higher-valued properties paid higher taxes than properties in lower-income settlements. As such, lower-income households contributed a lower amount (than higher-income households) to the already reduced price of USD 9.80. Coverage increased due to the fixed schedule of desludging, and the performance-based contract also ensured the timely provision of emptying services to households. Sumeet Facilities was expected to complete a target number of emptying services each month to receive their payments from the escrow account. Tying payments to coverage targets increased incentives to maintain the schedule of emptying services.

Today, the first cycle of the three-year scheduled desludging service covering the entire town is still underway and is expected to cover over 80% of the households (a population of ~64,000) in Sinnar. In the future, SMC and CEPT University hope to continue this model in Sinnar and improve its implementation based on learnings in the first cycle.

6.0 CONCLUSIONS FROM CASE STUDIES

Analysis of the case studies helped develop a deeper understanding of the implementation of market transitions. This analysis revealed that:

- A combination of political directives, economic incentives and social conditions, and participation from multiple stakeholders drove market transitions.
- Transitions were implemented through three types of actions or "levers" (player engagement, rules setting, and infrastructure support), and the sequencing of transitions varied across case studies.
- Implementation of market transitions allowed ULBs to influence several service delivery outcomes positively. However, implementation took several years, challenges to equitable pricing and ensuring the safety of services persisted, and marginalized SLPs did not benefit from transitions.

This section elaborates on these findings.

6.1 ENABLING FACTORS

A combination of political directives, economic incentives, and social conditions triggered market transitions.

Several political, economic, and social factors came together to trigger ULBs and other stakeholders to implement market transitions with SLPs (see Figure 25 in Appendix D). Each case study had at least two of these factors present.

Mandates from regulatory bodies to achieve coverage drove stakeholders to consider alternative approaches to expand services. This happened through the expansion of LWSC's mandate by NWASCO (the national regulator) in Lusaka and the privatization of water utilities in Manila. In the case of Kampala and southern Mozambique, ULBs and other stakeholders cited their internal desire to proactively leverage SLPs to expand services, given the flourishing but unregulated private sector in their respective contexts.

Economic factors incentivized ULBs to share the financial burden of delivering services with SLPs. In Kisumu and Manila, high rates of NRW in low-income settlements made it challenging to achieve cost recovery. Stakeholders saw partnerships with SLPs as a way to reduce NRW, especially since certain SLPs were often responsible for water theft. In Kampala, Lusaka, and southern Mozambique, the ULBs did not have the financial resources to extend the coverage of sewerage networks or piped systems or buy FSM trucks. ULBs in southern Mozambique also saw licensing of SLPs as an opportunity to expand government revenue, given the prevalence of SLPs in the region (~800 SLPs when the licensing framework was launched) and the range of licensing fees that could be levied (between USD 40 and USD 4,000 based on the SLP's scale of operation).

Social welfare objectives also played a role in motivating stakeholders to act. ULBs across case studies cited the unaffordability of services for low-income and marginalized populations as a key reason to get more involved in unregulated markets. In Kisumu and Lusaka, ULBs were motivated to mitigate the risk of cholera outbreaks that were common in low-income settlements.

Transitions entailed building mutual trust between the ULBs and SLPs.

In multiple cases, there were challenges at the start of the engagement between ULBs and SLPs. In Kampala, the SLPs perceived the ULB as potential competition and were initially averse to engaging with it. In Kisumu, some SLPs (e.g., local pushcart vendors) were unconvinced about the partnership model and attempted to sabotage it. In southern Mozambique, conflicts between SLPs and ULBs over territory encroachment were common. Through proactive efforts over time, ULBs and other stakeholders (e.g., regulatory authorities) built trust with the SLPs and convinced them of the benefits of engagement. These efforts included assurance of continued employment under the partnership model in Kisumu, and the introduction of the licensing framework and frequent negotiations to address concerns with the SLP collective in southern Mozambique. In the case of Khulna, it was the ULB that remained unconvinced of the SLPs' ability to perform their role. The ULB cited the limited business skills and service quality of SLPs as reasons for disengaging with them and considering more formal, mid-sized players as an alternative.

Buy-in and involvement from multiple governmental actors were critical for implementing transitions.

Involvement from multiple governmental actors was also seen in transitions (see Figure 26 in Appendix D). Across case studies, several ministries and governmental entities played a role in implementing transitions. The regulatory authority (where relevant) needed to authorize engagement with SLPs. They also provided directives to trigger the transition (as in the case of Manila and Lusaka). Other governmental actors helped create a favorable enabling environment for SLPs, such as through supporting the development of licensing frameworks and infrastructure. As different responsibilities lay with different government entities, multi-stakeholder coordination was an important aspect of the transitions. In Lusaka, for example, the national environmental regulator issued FSM truck licenses, but the national water and sanitation regulator (NWASCO) gave the ULB (LWSC) the mandate to expand FSM coverage.

An ecosystem of nongovernmental stakeholders supported ULBs in implementing transitions.

ULBs benefitted from an ecosystem of local nongovernmental entities and international development organizations that supported them in implementing transitions (see Figure 26 in Appendix D).

Local nongovernmental entities primarily played a facilitative role between SLPs or customers and the ULBs. For example, SLP collectives collaborated with stakeholders to enforce quality or pricing standards among their member SLPs (in southern Mozambique) or to conduct training sessions for SLPs (in Kampala). Community organizations acted as mediators between households and the ULBs and helped increase the uptake of formal services (in Kisumu).

International development organizations included donors that provided funds directly to ULBs to implement transitions or implementing programs that provided technical support to address capacity gaps of both ULBs and SLPs. Donor funding was used for (but not limited to) financing subsidies provided to households and capacity-building initiatives for SLPs. For example, in Kampala, Uganda, several funders (e.g., GIZ, BMGF) helped finance ULB-led activities, including licensing processes, training initiatives, and subsidies for households. The case studies did not present data that allowed a detailed analysis of the amount and usage of donor funding.

Implementing programs provided technical support for ULBs in developing regulatory frameworks (in southern Mozambique) and marketing strategies (in Kisumu). For SLPs, they included technical support

through a range of capacity-building initiatives covering financial, technical, and business skills. In southern Mozambique, this included on-ground programs such as USAID WASH-FIN, which provided technical and financial skills training for SLPs, and USAID SPEEED+, which created guidance manuals to aid SLPs' licensing process. In some instances, programs also played a facilitative role between SLPs and ULBs. For example, in Lusaka, Zambia, WSUP facilitated the partnership between the Water Trusts (SLPs) and the ULB in two peri-urban areas.

Manila was an exception, where the role of international development organizations is given relatively less importance in interviews and literature review, except to provide financing to households for direct piped connections. A large private concessionaire led the transitions in Manila, which had the resources and capabilities to implement the transitions itself.

6.2 LEVERS FOR CHANGE

ULBs and other stakeholders implemented transitions through a combination of three types of actions or "levers."

ULBs needed to manage their engagement with the SLPs (defined here as the "player" lever) serving the micro-markets they wanted to transition. They also needed to define the terms of their engagement with SLPs and influence their service delivery (defined here as the "rules" lever). Finally, complementary business environment investments (defined here as the "infrastructure" lever) were required to support SLPs' service delivery, either through physical assets, such as treatment facilities, or support services, such as marketing platforms or financing for SLPs. The actions ULBs undertook across the case studies are summarized in Figure 27 in Appendix D).

The purpose of the levers changed based on the transition.

The purpose of the levers changed based on the type of transition since the core characteristics and objectives of the transitions, and the market archetypes were different.

Transitions to facilitated markets were often the first step to start improving and regulating the quality of services of SLPs in unregulated markets. This required the **discovery** of a large number of SLPs ("player" lever) who were often geographically dispersed, operating informally, and hard to track. This was often done by engaging with SLP collectives (such as AFORAMO in Mozambique and the emptiers' association in Kampala). Discovery of SLPs was often supplemented with capacity-building initiatives, which included business and technical skills training sessions. These were often delivered through the collectives, as they served as a single point for accessing a large number of SLPs. Discovery was accompanied by **formalization** processes ("rules" lever) to give SLPs a structure to legally serve the market. This typically involved ULBs or other regulatory authorities issuing licenses to SLPs, which included guidelines such as quality and testing standards for water (in southern Mozambique) and safe disposal of fecal sludge for FSM (in Lusaka). Finally, SLPs were supported through the creation of **public goods**[65] ("infrastructure" lever). These were common resources that all SLPs could use in the market, such as transfer stations and treatment facilities for FSM, and testing facilities for water.

Transitions to managed markets allowed greater control over the affordability, service quality, and coverage of a select number of SLPs. ULBs and other stakeholders focused on the design of **partnership** modalities ("player" lever) that allowed them to exert greater control over the services of a select number of SLPs. This was done through formal mechanisms, such as DMMs (in Kisumu) or

[65] In economics, a public good is generally defined as a good that can be used by all individuals in a market, and its use by one individual does not diminish its availability for others.

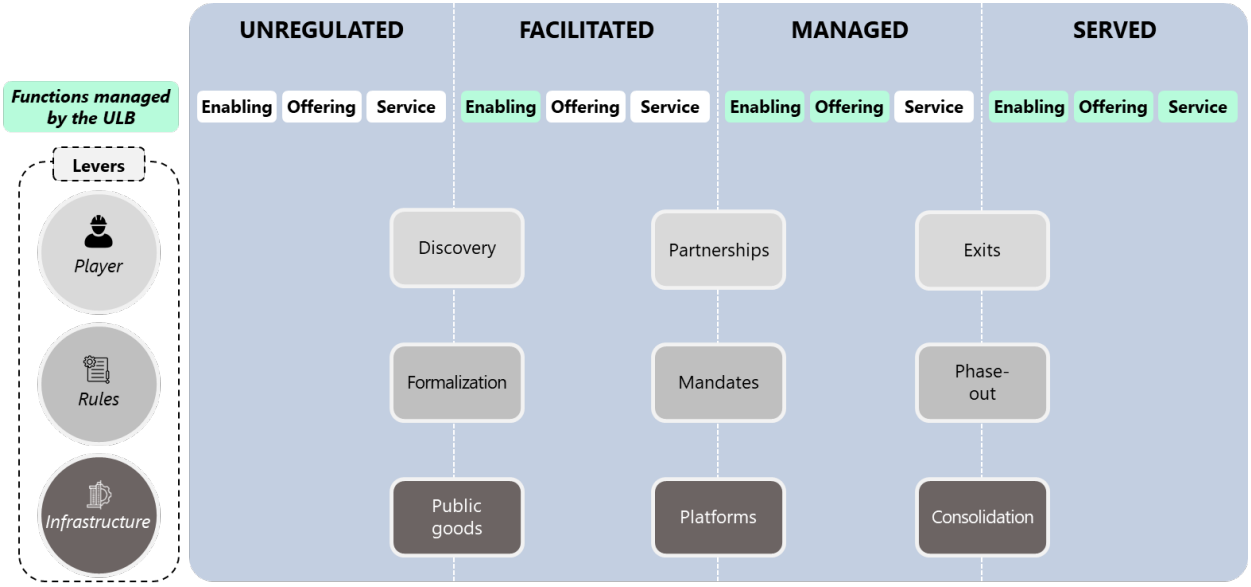
performance-based contracts (in Lusaka), or less formal means, such as MoUs (in Manila). The partnerships also specified **mandates** ("rules" lever) to SLPs for their pricing and target markets. A variety of tools were used to achieve this. For pricing, this included broad guidelines on maximum pricing (in Manila), compliance to predefined tariffs as part of termination clauses in contracts (in Kisumu), or subsidized rates in performance-based contracts (in Lusaka). For target markets, this included verbal agreements (in Kisumu), formally defined territory allocations (in Kampala), or even fixing the schedules for service delivery (in Sinnar). Finally, market **platforms** were created ("infrastructure" lever) to address specific challenges in service delivery. For example, the delivery of utility water in bulk to the edge of LIAs in Kisumu and Manila reduced the need for SLPs to invest in treatment themselves. Similarly, the customer management department in Kisumu and the call center in Kampala helped address the challenges of streamlining the collection and processing of customer feedback to improve service quality.

Barring the case study on Kisumu, there was insufficient data on ULBs implementing transitions to served markets. However, in Kisumu and in the plans outlined in the other case studies, ULBs had the following goals for each lever:

- Management of **exits** of SLPs who are essentially displaced ("player" lever);
- **Phase-out** of the rules established during previous transitions ("rules" lever); and
- **Consolidation** of piped or decentralized infrastructure to extend their own services to households ("infrastructure" lever).

The use of the levers across case studies to implement the transitions in micro-markets is represented in Figure 18.

Figure 18: Framework for managing transitions in micro-markets



The sequencing of transitions by ULBs varied across the case studies, and some transitions involved both SLPs and larger players.

In some cases, ULBs transitioned markets from unregulated to facilitated, followed by a transition to managed markets (in several LIAs of Kampala). In other cases, ULBs transitioned markets directly from unregulated to managed when they were able to do discovery and partnerships together (in Kisumu and Lusaka).

The sequencing of transitions also varied within the same city, as was the case in Lusaka for FSM. For the central, relatively affluent regions, the regulator transitioned markets from unregulated to facilitated. In the peri-urban areas of the city, the ULB directly transitioned markets from unregulated to managed.

ULBs also did not necessarily transition micro-markets toward the right on the framework. For example, in East Manila, the privatization of the utility denoted transitioning the served markets in the city to managed. The large private player (Manila Water) then transitioned individual unregulated micro-markets to managed, by leveraging SLPs.

In specific case studies (e.g., in Khulna and Sinnar for FSM), ULBs also attempted transitions with mid-sized players.

6.3 CHANGES IN SERVICE DELIVERY OUTCOMES AND IMPLEMENTATION CHALLENGES

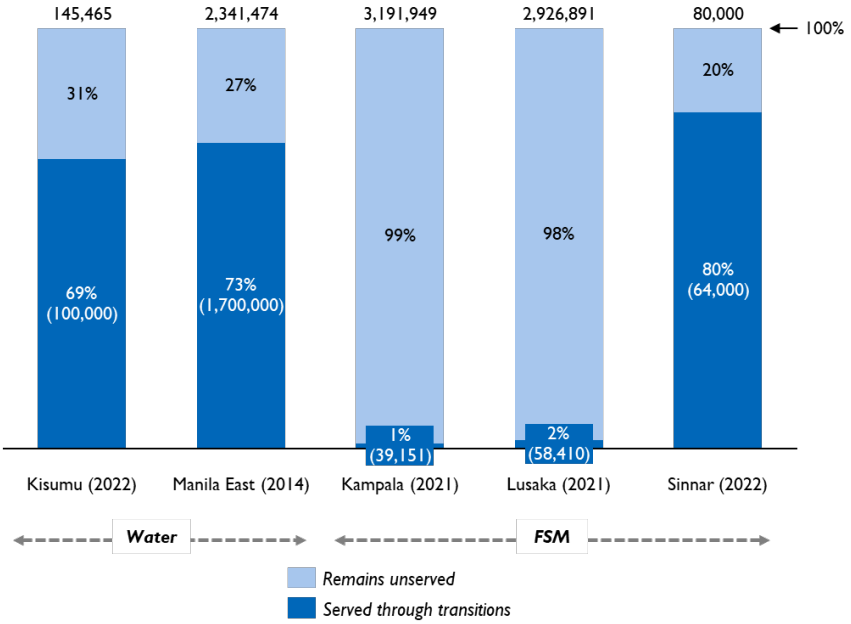
Transitions allowed ULBs to influence coverage, quality, and affordability of SLP services.

Transitions led to an expansion in the coverage of formal services, notably in micro-markets with low-income and marginalized populations who would otherwise remain unserved by ULBs. Figure 19 shows the estimated proportion of the previously unserved population covered through transitions to managed markets. ULBs did not document precise coverage data for transitions to facilitated markets, but these transitions also allowed ULBs to formally expand coverage of services through regulated SLPs.

The coverage gap addressed in Lusaka and Kampala for FSM was lower because sewerage coverage was lower in Lusaka and Kampala (16% and 8%, respectively) compared to piped water coverage in Kisumu and Manila East (~63% for both), resulting in a larger unserved population. Additionally, the interventions in these cities are still scaling up, and penetration within micro-markets was low. Sinnar is an exception for FSM since the city's population is significantly lower than other cities.

The quality of services improved along several dimensions. Customer service significantly improved in several case studies as ULBs began directly interacting with customers to document their concerns and feedback. For example, in Kisumu, the ULB set up a dedicated customer services department to which households under the model could report complaints and provide feedback. In Kampala, the ULB set up a call center model that interacted with customers to verify service completion and track feedback. The reliability of services improved due to the increased involvement of the ULBs in service provision. In Kisumu and Manila, the continuous supply of treated water allowed SLPs to ensure reliable and safe water supply to households. In Sinnar and Lusaka, the introduction of a performance-based contract helped ensure the delivery of services that met the defined quality standards.

Figure 19: Estimated proportion of previously unserved population served through transitions to managed markets

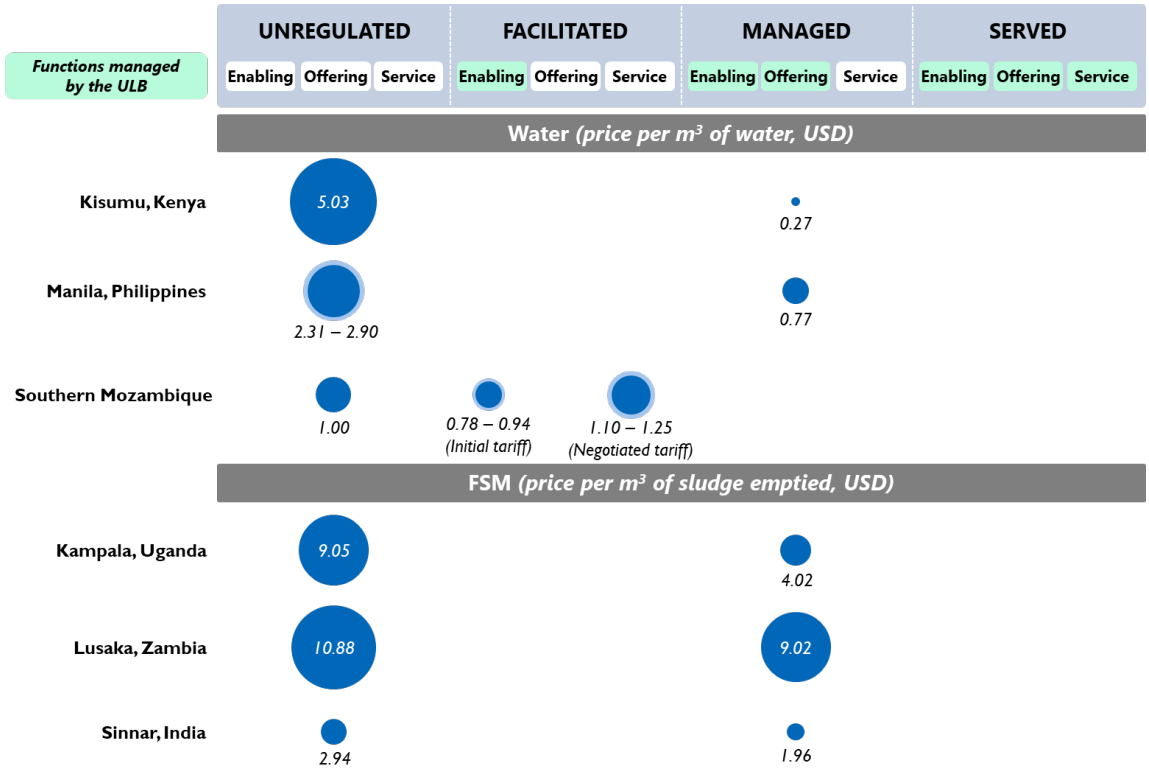


Notes:

- *The proportion of "population served through transitions to managed markets" is the proportion of the total population without access to direct ULB-led services who would remain unserved in the absence of the transitions.*
- *For FSM, the chart depicts the estimated cumulative population served through transitions to managed markets.*
- *For southern Mozambique, precise coverage data was not available; for Khulna, data on coverage was not available since the transitions were not successful; these two case studies are not included in the figure.*
- *For Kisumu, the total unserved population in 2022 is assumed to be the total population KIWASCO did not cover and those served under the DMM (as KIWASCO counts the population served by the DMM in its coverage).*
- *For Manila East, the unserved population in 2014 is assumed to be the total population Manila Water did not cover and those served under the TPSB (as the source data includes the population served by TPSB in Manila Water's coverage).*
- *Kampala's coverage data from 2017 to 2020 is extrapolated based on KCCA figures for the population served through the FSM call center in 2017, and data from 2020 to 2021 is based on the population served under the subsidy model.*
- *Lusaka's coverage data from 2018 to 2019 is extrapolated based on the population the Chazanga and Kanyama Water Trusts served until 2017, and data from 2019 to 2021 is based on the population served under the subsidy model.*
- *For Sinnar, the entire town's population is considered unserved as there is no centralized sewerage network, and desk research did not indicate that the ULB provided decentralized services either.*

Affordability also improved through transitions, especially to managed markets, with the implementation of mechanisms to manage SLPs' prices (see Figure 20). The exception was southern Mozambique, where the regulator attempted to set tariffs within the facilitated market. However, in the absence of mechanisms to implement it and manage SLPs' pricing on-ground, the prices eventually increased due to push from SLPs. Despite these improvements in affordability, challenges to ensuring equitable prices persisted (detailed later in the section).

Figure 20: Change in affordability through transitions



Notes:

- *The scale for the size of bubbles is different for FSM and water; within each sector, bubbles are sized approximately to scale.*
- *For Kisumu, the ULB had a tiered tariff for direct and DMM connections. The average price per m^3 is calculated assuming a consumption of 20 m^3. Price in the unregulated market is calculated as 10x the price KIWASCO charged for its direct piped connections.*
- *For southern Mozambique, the range in the facilitated market represents the differential tariffs set under a national regulation (based on the SLPs' source of electricity). Two sets of tariffs are marked under the facilitated market as tariffs were revised after negotiations with SLPs.*
- *For Sinnar, the prices represent the price per m^3 price of sludge emptied, assuming an average septic tank size of 5 m^3 based on an analysis of ~20 septic tanks in Sinnar.*
- *Data on prices in Khulna, Bangladesh, is not available since the transitions were not successful.*

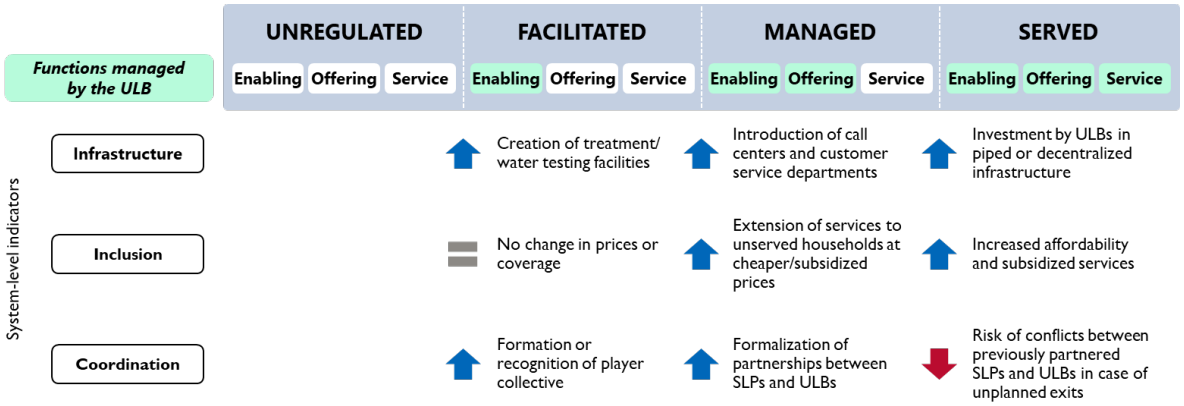
Transitions led to a potential improvement in system-level resilience.

Transitions led to an improvement in several resilience indicators at the system-level (see Figure 21). Infrastructure improved as stakeholders invested in building treatment facilities and other market platforms (like the call center in Kampala). Inclusion improved because transitions led to expansion and improvement of services to low-income and marginalized groups. Coordination improved as transitions were characterized by greater interaction between ULBs, SLPs, and stakeholders, especially through SLP collectives.

As noted in Appendix B, improvement in these indicators can improve the resilience of the urban service delivery ecosystem and allow it to better absorb and respond to shocks. The additional infrastructure investment supports the ability of the system to maintain service standards through future shocks. More inclusive services increases the likelihood of low-income and marginalized households

receiving minimum standards of services through future shocks. Finally, coordination mechanisms like SLP collectives will enable stakeholders to coordinate better to respond to shocks.

Figure 21: Impact of transitions on system-level resilience indicators



Transitions took several years and were scaled incrementally, given the challenges involved in implementing them.

Each transition posed unique challenges, which had implications for its timeline and geographic scale (see Figure 22).

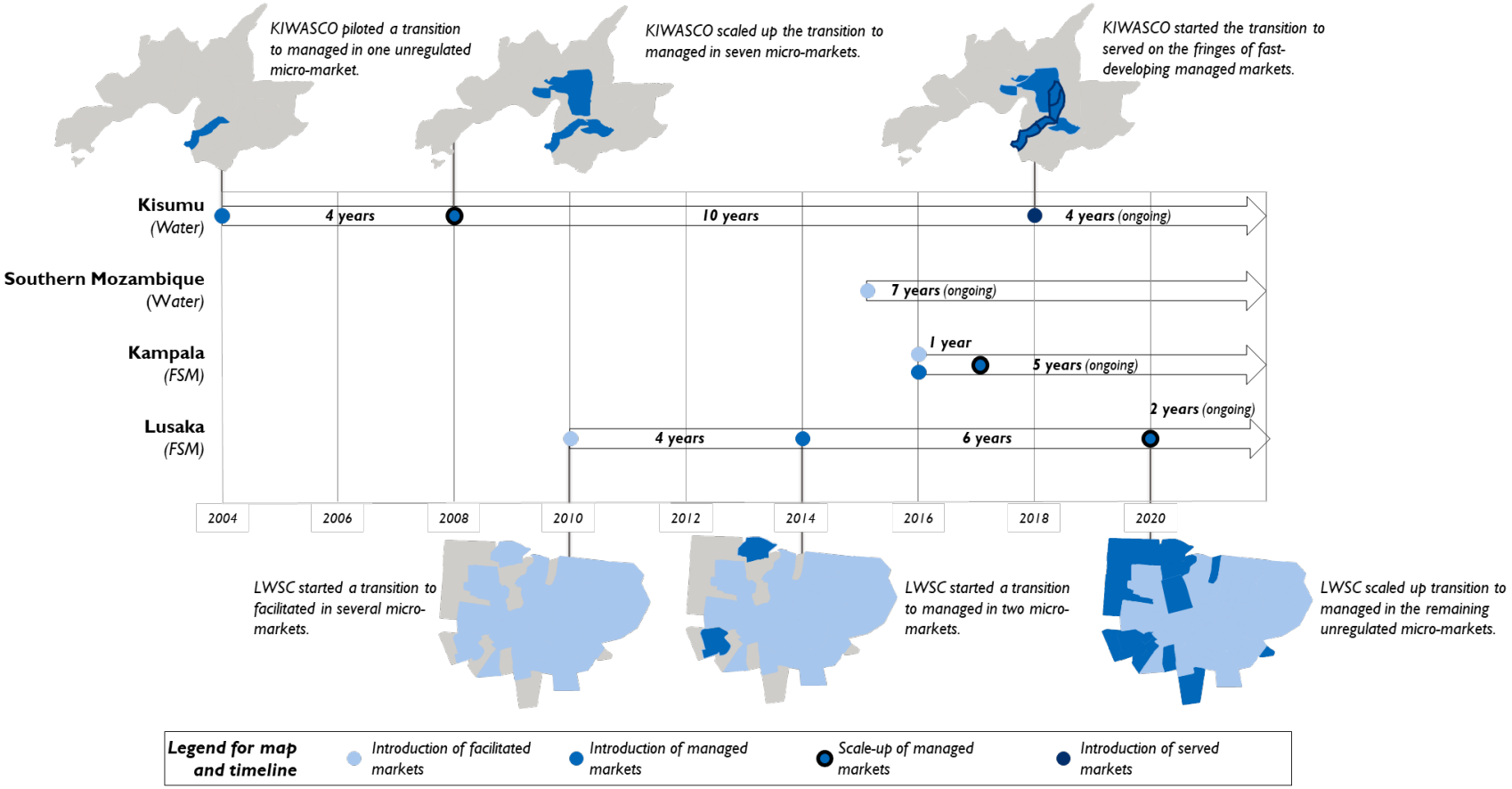
Transitions to facilitated markets involved finding and engaging with tens or hundreds of SLPs who were otherwise off the radar and creating centralized frameworks to formalize them and infrastructure for them. But the engagement was relatively low touch, and ULBs could transition several micro-markets at the same time, as seen in Lusaka in 2010. This provided a foundation for ULBs to implement transitions to managed markets. This took one year in Kampala and four years in Lusaka (see Figure 22). In southern Mozambique, the transition to facilitated is still ongoing.

Transitions to managed markets (from unregulated or facilitated markets) involved in-depth and ongoing engagement with SLPs—designing partnerships (through contracts, MoUs, or verbal agreements) and creating mandates and platforms to improve their services. These transitions were implemented through pilots in a few micro-markets, followed by a scale-up over a longer duration. This was seen in Kisumu (for water), and Lusaka and Kampala (for FSM), where it took between one to six years after pilot implementation to begin scaling up managed markets (see Figure 22).

Transitions to served markets (in Kisumu) or displacement of SLPs within managed markets (in Manila) involved the challenge of bringing together the financial resources, technical capacity, and legal provisions to extend ULB-led systems in micro-markets. These transitions started more than a decade after the initial transitions to managed markets in Kisumu and Manila. Further, the transitions happened in pockets, either beginning with the outer fringes of micro-markets, as seen in Kisumu (see Figure 22), or in individual micro-markets, as seen in Manila.

Time was also required to build mutual trust between the ULBs and SLPs, get buy-in from multiple stakeholders, and coordinate their actions (as detailed in Section 6.1). For example, in southern Mozambique, the regulatory authority faced conflicts with SLPs, as the latter group believed their viability was threatened after the introduction of tariffs in 2017. It took three to four years of negotiations to arrive at a consensus on a new tariff design in 2021. In Kisumu, it took over two years (between 2004 and 2006) to convince some SLPs, who frequently resorted to vandalism, that the partnership model could benefit them, by securing their continued employment.

Figure 22: Timeline of transitions for select case studies



Notes:

- *The mapping of the micro-markets through the transitions is not precise but indicative. It is based on a review of piped water/sewerage network maps of Kisumu and Lusaka and inputs received during KIIs. The study team verified the final maps with the ULB staff of the two cities. Data on population coverage by market archetype was not available.*
- *Kampala had two transitions in 2016—one from unregulated to facilitated across the city and one from unregulated to managed in five LIAs. In 2017, the ULB transitioned several facilitated micro-markets to managed by scaling up the transition to managed (implemented in 2016) to all LIAs. Refer to Section 5.4 for further details.*

Challenges to achieving safety and equitable prices persisted.

The case studies consistently highlighted the fundamental challenges of ensuring the safety and equitable pricing of services delivered through SLPs.

Compliance with safety standards was a challenge because it typically entailed a cost burden for SLPs: water SLPs in southern Mozambique have to pay for the testing of water, and FSM SLPs across case studies incur transport and/or disposal fees for safe disposal. The exception is when SLPs received treated water (like in Kisumu and Manila), which was cheaper than sourcing untreated water themselves.

Equitable pricing was a challenge because of the need to strike a balance between affordability for low-income and marginalized households, the viability of SLPs, and sustainable financing of services. Manila's prices in LIAs were higher than those paid by higher-income households with direct piped connections. Southern Mozambique's initial prices were also higher than those that households with direct piped connections paid, and they increased further after SLP cited challenges to their viability. Kisumu's prices were cheaper than those that higher-income households paid, but in the long term, the national regulatory authority pushed to equalize tariffs across the city. Donor funding enabled subsidies in Lusaka and Kampala, but the ULBs acknowledged that this was not sustainable in the long term.

Marginalized SLPs faced barriers to benefiting from transitions.

The case studies presented some instances where women were able to access opportunities if explicit measures were made for them. For example, in Kisumu for water, and Kampala and Khulna for FSM, ULBs explicitly designed policies to ensure women could participate in transitions. However, even in these instances, social biases and norms reduced their ability to sustain these benefits. In Kisumu, successful women-led enterprises often faced the threat of being taken over by unemployed male relatives. In Khulna, women-led enterprises were provided Vacutags to support safe emptying practices, but social norms prevented them from entering households to perform emptying services themselves (cited as one of the reasons for their ceasing operations). Women entrepreneurs struggled to balance household expectations with the hours required to attend capacity-building training sessions, as was the case in southern Mozambique.

For manual emptiers, caste-based and social stigma in Khulna and Lusaka, respectively, reduced their ability to perform their duties in safe conditions or access public spaces. In Kampala, manual emptying was banned and penalized. This reduced the incentive of manual emptiers to self-identify for capacity-building initiatives to improve the safety of their services (e.g., in Kampala, for training programs to use Gulpers).

7.0 AREAS FOR FURTHER RESEARCH

The study started with the aim of understanding the possible approaches for ULBs to formally leverage SLPs for the citywide provision of water and FSM services. The findings from this study highlight that ULBs can leverage SLPs by transitioning micro-markets across different archetypes. These archetypes vary based on the type of interaction between ULBs and SLPs.

The study also indicated that the knowledge base on this topic is still nascent, with limited examples and documentation of ULBs formally leveraging SLPs to deliver services. Figure 23 in Appendix A highlights the paucity of such interventions—only 32 interventions out of 1,397 analyzed (2.29%) had a relatively high focus on SLPs. Even these 32 interventions do not appear to have completed implementation. As noted in the case studies, ULBs and other stakeholders in southern Mozambique, Kampala, Lusaka, and Khulna are still experimenting with approaches to expand coverage of safe, affordable services. The implementation experience for the FSM case studies, in particular, is relatively recent (the last 5 to 10 years).

Additional research, motivated by the following questions, can help sector funders and ULBs to implement transitions and leverage SLPs for delivering water and FSM services.

- Choice of transitions: What choices do ULBs make to implement transitions with SLPs, and what conditions influence these choices?
- Implementation of transitions: How can ULBs use the identified levers to successfully implement different transitions with SLPs?
- Impact of transitions: What is the impact of these transitions on service delivery outcomes, marginalized groups, and resilience?

The following sections provide specific areas and potential research questions to build evidence for each of the three questions based on the findings in this study.

7.1 CHOICE OF TRANSITIONS

The case studies presented a range of enabling factors that facilitated the implementation of the transitions in the seven cities. These included political, economic, and social triggers, and the participation of various governmental and nongovernmental stakeholders, as presented in Section 6.1.

However, it is unclear if these factors are necessary and/or sufficient for ULBs to implement transitions due to the limitations of the case study research. The case studies reflect a positive selection bias, i.e., they only include initiatives to leverage SLPs and mostly focus on successful initiatives (except for the case of Khulna), for which documentation is likely more available than for cases of failure. The case study sample also could not provide a sufficient variety of transitions by sector to allow for widely generalizable findings. Other factors may also inform the choice of transitions, such as market conditions or the viability of transitions, but were not cited as considerations in the case studies.

The case studies also indicated that the ULBs' sequencing of transitions varied, with some unregulated markets transitioning first to facilitated and others directly to managed but did not provide data on the factors that influenced these choices. It was also not clear what the ULBs defined as the end-goal for engagement with SLPs, or how this was decided.

Additional research should include an in-depth comparative analysis of drivers and barriers that determine ULBs' choice of transitions, across contexts and sectors (FSM and water). This should include

cities where ULBs have chosen not to implement transitions. The research should include understanding:

- The incentives and challenges for ULBs and other stakeholders to implement transitions that leverage SLPs;
- The characteristics of the micro-markets where transitions are implemented;
- The various stakeholders and the roles they play in the transitions;
- The viability of transitions for ULBs, from a resourcing perspective, and for the broader market, including SLPs; and
- The effect of these factors on the ULBs' decisions on sequencing and end-goal of transitions.

7.2 IMPLEMENTATION OF TRANSITIONS

The case studies presented three levers that ULBs consistently used to implement transitions—players, rules, and infrastructure. Their purpose evolved across transitions (see Figure 18). The case studies presented several examples of initiatives undertaken by ULBs and other stakeholders while using these levers. However, evidence gaps still persist and need to be addressed through additional research.

This section presents the evidence gaps for each lever by transition and the proposed research questions to address these gaps and build a nuanced understanding of how ULBs can implement transitions.

7.2.1 TRANSITIONING TO FACILITATED MARKETS

Player

The primary focus of the player lever when transitioning to a facilitated market is the **discovery** of a large number of SLPs.

The case studies highlighted that ULBs often engage with player collectives to facilitate the discovery of SLPs. But they could not provide adequate evidence on the various types of player collectives that may exist in a context and the challenges to engaging with each. Player collectives can range from legally registered associations to informal groups. Evidence on approaches to engaging with SLPs in contexts without collectives, or where they are particularly challenging to engage with, would also be particularly useful for these difficult contexts.

The discovery of SLPs is typically accompanied by capacity-building initiatives. KIIs indicated that the success of these initiatives appears to be measured anecdotally or based on inputs (e.g., number of SLPs trained or the number of training sessions conducted). But the degree to which these initiatives change the SLPs' business and technical skills, or the quality of services to households, is unclear. KIIs in the case studies also mentioned that it is unclear if the impact of these initiatives can be sustained over time.

Additional research on this topic should focus on the following questions:

- What are the challenges ULBs face in engaging with different types of collectives?
- How can ULBs locate and engage SLPs in the absence of collectives?
- What is the impact of capacity-building initiatives on SLPs' business and technical skills, and the quality of services delivered to households? What are the barriers to sustaining this impact over time?

Rules

The primary focus of the rules lever when transitioning to facilitated markets is the **formalization** of SLPs to give them a structure to legally serve the market.

ULBs in the case studies were successfully able to formalize SLPs through engagement with collectives, which reduced the individual burden for SLPs to navigate the formalization process and comply with formalization requirements. But the challenges faced by SLPs to formalize in the absence of collectives need to be better understood. Additionally, even the SLPs that are part of collectives struggled to comply with the safety standards part of formalization frameworks when it involved a cost burden.

Additional research on this topic should focus on the following questions:

- What barriers do SLPs (especially those from marginalized groups) face in formalizing in the absence of collectives?
- How can SLPs be incentivized to comply with safety standards?

Infrastructure

The primary focus of the infrastructure lever when transitioning to a facilitated market is the creation of **public goods**, such as treatment facilities (for both water and FSM), water testing laboratories, and transfer stations/disposal sites for FSM.

The aim of this infrastructure investment is to improve the safety of services. The case studies did not present data on the degree to which SLPs use the infrastructure and on the subsequent change in the safety of services. However, the literature review on FSM suggested that SLPs often underutilize high-cost infrastructure.

Additional research on this topic should focus on the following questions:

- How does the introduction of treatment/quality testing facilities, transfer stations, and disposal sites change practices of SLPs?
- What are the barriers for SLPs to use this infrastructure? How can they be incentivized to use it?

7.2.2 TRANSITIONING TO MANAGED MARKETS

Player

The focus of the player lever when transitioning to managed markets is the design of **partnerships** to engage with select SLPs. Partnerships with SLPs in the case studies were done using a range of agreements. These included MoUs with broad guidelines to highly structured performance-based contracts. The selection process for the partnerships also varied from web-based tenders to publicly advertised calls-for-interviews within micro-markets.

Additional evidence is required to develop guidance for choosing the appropriate selection processes and partnership mechanisms for different contexts. The challenges faced by SLPs in engaging with different selection and partnership mechanisms also need to be better understood.

Additional research on this topic should focus on the following questions:

- What are the benefits and challenges of implementing different selection and partnership mechanisms? How do these vary by context?
- What are the challenges for SLPs (especially those from marginalized groups) to engage in different selection processes and mechanisms?

Rules

The focus of the rules lever when transitioning to managed markets is to develop **mandates** to improve the affordability and coverage of services.

However, there are evidence gaps in successfully implementing mandates in both sectors. For water, enforcing compliance with pricing mandates was highlighted as a challenge.

For FSM, subsidies were cited as unsustainable by ULBs and SLPs. Additionally, none of the FSM case studies in large cities achieved significant scale in expanding coverage. Understanding the challenges to implement target market mandates at scale is critical for ensuring equitable expansion of services, since SLPs typically serve marginalized households (such as lower-income and socially vulnerable groups) who have a lower ability to pay.

For both sectors, ULBs and other stakeholders attempted to use various tools for enforcing and monitoring mandates, but their challenges and level of success in ensuring compliance are unclear.

Additional research on this topic should focus on the following questions:

- How can SLPs be incentivized to comply with mandates? What are the challenges ULBs face in monitoring SLPs' compliance?
- How can FSM models be financed to ensure affordability for households (especially for marginalized households), viability of SLPs, and sustainable financing of services?
- What customer acquisition mandates (e.g., scheduled vs. on-call) allow for the expansion of FSM services, especially to marginalized households?

The primary focus of the infrastructure lever when transitioning to managed markets is the creation of market **platforms** to support service delivery by SLPs. These platforms are usually designed to address specific challenges faced by SLPs, such as increasing customer demand and addressing customer feedback on service quality.

The case studies did not present sufficient data on the impact of these platforms. The impact on SLPs' service provision and viability was measured anecdotally. Additionally, the costs faced by the ULBs to set up and sustainably operate these platforms are unclear.

Additional research on this topic should focus on the following questions:

- What is the impact of market platforms (e.g., call centers, branding initiatives) on the service provision to households (e.g., customer satisfaction and quality of service) and on the viability of SLPs?
- What are the costs of setting up different market platforms? How can ULBs fund these platforms sustainably?

7.2.3 TRANSITIONING TO SERVED MARKETS

The case studies did not present sufficient data on planned implementation of transitions to served markets, and, hence, the study could not identify key evidence gaps specific to this transition. Additional research at this stage should focus on observing the implementation of this transition, where it occurs, to identify the key challenges faced by households and SLPs (especially those from marginalized groups) and ULBs during implementation.

7.3 IMPACT OF TRANSITIONS

The case study analysis presented only a preliminary understanding of the impact of transitions on households and SLPs (refer to Section 6.3). However, there were negligible data on the service delivery outcomes of transitions to facilitated markets. There were also limited data to develop a nuanced

understanding of the impact of transitions on marginalized households and SLPs, and on resilience of the broader system of urban service delivery.

Additional research should assess services pre-transition and then track the impact of different transitions. Counterfactual groups (i.e., those not included in the transitions) should be included where technically and politically feasible to determine the efficacy of the transition in improving service delivery. This research should focus on understanding the impact of transitions on the ULBs' objectives for service delivery outcomes, and on equity and resilience, which should include:

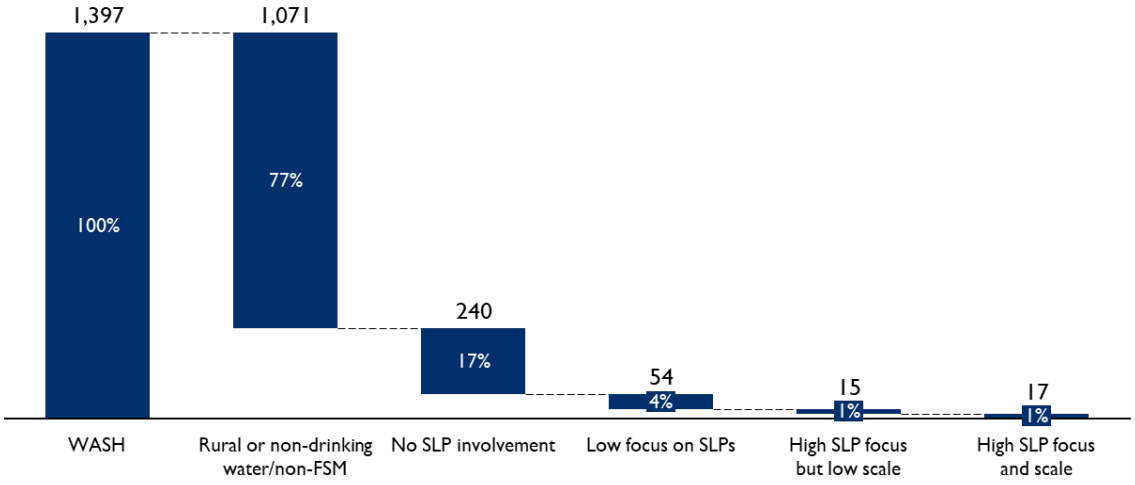
- Changes in service delivery outcomes—affordability, coverage, and quality of services—for the households, including collection of disaggregated data to explicitly analyze impact on marginalized households served through transitions;
- Impact of transitions on marginalized SLPs (e.g., women, youth, manual emptiers) operating in the micro-market and their barriers to accessing opportunities under the transitions; and
- The impact on the resilience of the urban service delivery system.

APPENDIX A: METHODOLOGY FOR CASE STUDY SELECTION

The study team followed a multi-step process to select case studies for the research, summarized below:

- **Database creation:** Developed a long list of 1,397 water, sanitation, and hygiene (WASH) projects from over 50 funder and intervention databases, and literature (left blue bar in Figure 23).
- **Retention of in-scope projects:** Retained 326 projects that involved urban regions, and water supply and fecal sludge management (FSM) services (sum of last four blue bars in Figure 23).
- **Identification of small local provider (SLP)-involved projects:** Identified 86 projects that included interventions involving SLPs in their implementation (sum of last three blue bars in Figure 23).
- **Prioritization of interventions:** Identified 17 high-priority interventions based on their focus on SLPs and scale of impact (last blue bar in Figure 23).
- **Final selection:** Selected six case studies and one targeted caselet based on recommendations from experts and diversity across geographies, sectors, and city sizes.

Figure 23: WASH interventions by scope, focus on SLPs, and scale (n=1,397)



A.1 DATABASE CREATION

The team identified a total of 1,397 projects. First, the team developed a database of 1,379 WASH projects in low- and middle-income countries, primarily using over 50 funder and intervention databases. These projects included both standalone interventions (e.g., capacity-building training sessions) and larger programs with multiple interventions operating within them. These included both donor-funded projects and urban local body (ULB)-led interventions, without donor funding. Table 4 provides an overview of the split of the projects across funders.

Table 4: Split of projects across funders

Funder	Interventions Reviewed
United States Agency for International Development (USAID)	197
Bill and Melinda Gates Foundation (BMGF)	173
German International Development Agency (GIZ)	45
World Bank	284
Foreign, Commonwealth, and Development Office (FCDO)	118
African Development Bank (AfDB)	195
Asian Development Bank (ADB)	102
Other funders	265
Total	1,379

Note: Other funders include The Stone Family Foundation, The Foundation Suez, The Coca-Cola Foundation, Inter-American Development Bank, and Global Sanitation Fund.

The team scanned databases of seven major funders in the WASH sector (based on the research team's knowledge of the sector): USAID, BMGF, GIZ, World Bank, FCDO, AfDB, and ADB. Next, the team conducted a targeted search to identify additional funders and implementers and scanned their websites/databases. This was to ensure sufficient coverage of interventions by lesser-known funders. The team used two sources to identify the additional funders and implementers:

- **Intervention reports from the previous step:** The team scanned funders and implementers mentioned in the intervention reports sourced in the earlier steps to identify names of co-funders or implementers other than the seven known funders.
- **Web-search:** The team used search strings such as "WASH funders," "WASH interventions," "water supply interventions," "sanitation interventions," and "urban sanitation."

To the database of 1,379, the team added 18 interventions (i.e., a total of 1,397) that appeared relevant during the literature review. These interventions did not appear in the funder databases because of one of two reasons:

- ULBs implemented them independently without the support of external funders or implementers; or
- They were implemented very recently and may not have been updated in the funders' databases.

A.2 RETENTION OF IN-SCOPE PROJECTS

The study retained 326 projects that prima facie met the following criteria:

- **Were implemented in urban regions:** The team selected only those projects with full or partial implementation in urban regions, which included major cities, peri-urban regions, and small towns.
- **Focused on water supply or FSM service provision:** The team retained only those projects that appeared to focus on some facet of water supply **or** FSM service provision. The study team identified the focus using simple search strings in their project report/briefs/factsheets.

The team carried out a preliminary check for duplicate projects and removed projects that appeared to be evaluation reports or research grants.

A.3 IDENTIFICATION OF SLP-INVOLVED PROJECTS

The team retained 86 projects based on whether they had interventions that involved SLPs. They scanned project evaluation reports/factsheets/briefs of all in-scope interventions to check if they indicated involvement of SLPs as beneficiaries or key participants. A sample list of search strings used is provided below:

- "Local player"
- "Small player"
- "Manual emptier"
- "Water suppliers" and "informal"
- "Informal provider"
- "Small operator"
- "Private sector" and "small player"

A.4 PRIORITIZATION OF INTERVENTIONS

The team categorized the 86 interventions based on their level of focus on SLPs and their scale of impact, and identified 17 high-priority interventions (refer to Figure 23 for the split of interventions across the multi-step process) that met the following criteria:

- **High focus on SLPs:** The team referred to project reports and classified interventions as having a high focus on SLPs if:
  - The intervention brief/factsheet/official report explicitly listed the element involving SLPs (e.g., training, licensing) under its key objectives/purpose/activities section; **OR**
  - The evaluation report/project website listed the element involving SLPs as one of its key performance indicators or key achievements (e.g., number of emptiers trained, number of local operators employed at water kiosks).
- **High scale:** Interventions were classified as high scale if they:
  - Engaged with 20 or more SLPs; **OR**
  - Impacted at least 20,000 households.

For data on the scale of impact, the study primarily relied on the number of SLPs because:

- Only eight out of the 32 interventions with a high focus on SLPs had any population data, most of which got filtered out when the impact threshold was applied; and
- Data on the population impacted was not consistently available because most interventions reported either targeted population or did not isolate the impact attributed to SLP-specific element(s).

A.5 FINAL SELECTION

The team held conversations with six experts in the WASH sector to get recommendations for the final case selection. The experts included a mix of funders and implementers as summarized in Table 5.

Table 5: Overview of conversations with experts

Expert Type	Number of Conversations	Organizations
Funders	2	BMGF
Funders	1	USAID
Funders	1	World Bank
Implementers	1	Water and Sanitation for the Urban Poor (WSUP)
Researchers	1	IHE Delft Institute for Water Education

The team finalized the six cities/regions (see Table 6) for the case study research based on the following criteria:

- At least one of the six experts recommended the case study; and
- There was diversity across sectors, geographic regions, and city size.

Table 6: Overview of case study final selection

Sector	City/Region	Region	City Size
Water	Manila, Philippines	Asia	14.4 million
Water	Southern Mozambique	Sub-Saharan Africa	6 million
Water	Kisumu, Kenya	Sub-Saharan Africa	379,000
FSM	Lusaka, Zambia	Sub-Saharan Africa	3.4 million
FSM	Kampala, Uganda	Sub-Saharan Africa	3.6 million
FSM	Khulna, Bangladesh	Asia	950,000

Notes:

- *The population for Manila, Kisumu, Kampala, and Khulna is based on 2022 data from United Nations World Population Prospects (Macrotrends LLC 2023a; Macrotrends LLC 2023b; Macrotrends LLC 2023c; Macrotrends LLC 2023d).*
- *The population for southern Mozambique is a sum of the population data of the different cities in the region: Maputo city, Gaza, Inhambane, and cities falling under Maputo Province as per the most recent census (Brinkhoff 2022).*
- *The population for Lusaka is based on 2021 data from Knoema (Knoema 2022).*

In addition to the six case studies, the study team developed a caselet of the scheduled desludging model in Sinnar, India. The rationale is given in Section 2.1.2.

APPENDIX B: APPROACH TO ANALYZING RESILIENCE

Resilience is the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth (USAID 2012).

The study analyzed resilience through a change in resilience indicators since the case studies did not present data on the impact of shocks. Theoretically, improvement in these indicators improves the resilience of the system to absorb future shocks.

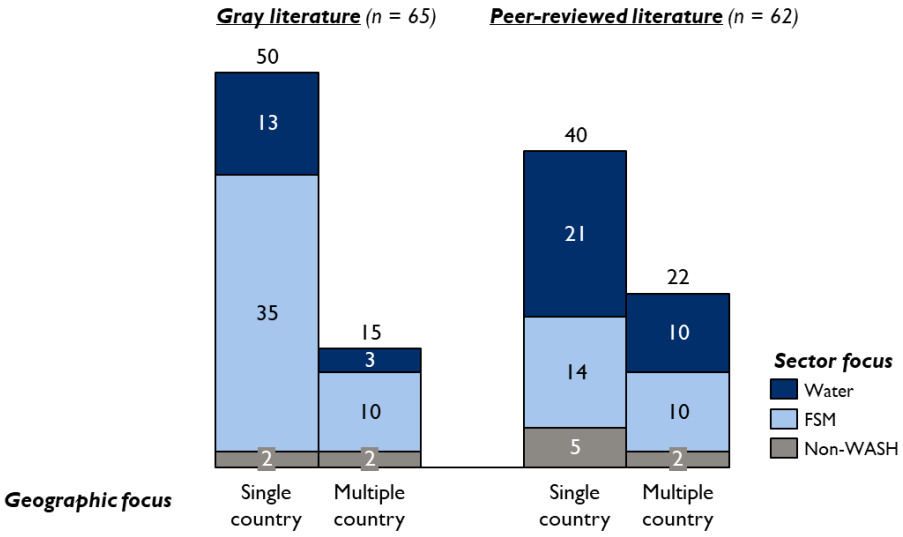
The study focused on the resilience of the urban service delivery system for water and FSM services, measured using three indicators adapted from the World Bank (World Bank 2019a). An expected improvement in these indicators within the service delivery system would likely improve its resilience to absorb future shocks. The indicators are:

- **Infrastructure:** An increase in the quantity and quality of infrastructure creates spare service delivery capacity that can be used during shocks.
- **Inclusion:** An increase in access to services for underserved populations allows them to maintain a minimum standard of living during shocks.
- **Coordination:** An increase in coordination between market actors allows for a more coordinated system-wide response to manage shocks.

APPENDIX C: CATEGORIZATION OF LITERATURE REVIEWED

Figure 24 provides a split of the documents reviewed between gray and peer-reviewed literature by the level of geographic focus and by sector.

Figure 24: Split of gray and peer-reviewed literature by geography and sector focus



Note: Documents with a non-WASH sector focus refer to those reviewed to understand formalization of small enterprises since literature on formalization of SLPs of water and sanitation services was limited

APPENDIX D: SUMMARY OF CASE STUDIES

Figure 25, Figure 26, and Figure 27 summarize the key triggers, actors, and activities across the case studies.

Figure 25: Triggers for implementing transitions

	Water			FSM	
	Kisumu, Kenya	**Manila, Philippines**	**Southern Mozambique**	**Kampala, Uganda**	**Lusaka, Zambia**
TRANSFORMED FROM	*LIAs dominated by cartels illegally selling water at high prices*	*LIAs with unsafe and unaffordable water provided by informal vendors due to uncertain land rights*	*PUAs with inadequate utility supply and growing number of unregulated players providing water to unserved households*	*LIAs with low affordability of and access to safe services, primarily served by informal manual emptiers*	*PUAs with inadequate infrastructure for, and low accessibility to, safe services, primarily served by informal manual emptiers*
CHANGED INTO	*LIAs with affordable, safe water delivered by contracted operators to 25% of city's population*	*LIAs with affordable, safe water served by formally contracted organizations to 27% of city's population*	*PUAs with a large number of legal private water providers providing water under a single collective*	*LIAs with subsidized, safe services for 1% of city's population and a flourishing legally recognized collective*	*PUAs with access to subsidized, safe services for 2% of city's population*
	TRIGGERS				
Political	*No political triggers cited in desk research*	***Privatization of the utilities in East and West Manila*** *with directives for high coverage in Metro Manila*	***Desire for control over PWP businesses*** *that informally served over 50% of households in cities like Maputo* ***Territory encroachment conflicts*** *between water utilities and PWPs*	***Desire for control over services*** *provided by ~100 unregulated SLPs*	***Expansion of LWSC's mandate*** *to provide safe FSM services, instead of just operating treatment facilities*
Social	***Frequent cholera outbreaks in LIAs*** *from the consumption of unsafe water* ***Low affordability*** *of water in LIAs with prices of cartels ~10x the prices of utility-provided connections*	***Lack of clear land tenure rights*** *impacting utilities' ability to directly serve LIAs* ***Low affordability*** *of water in LIAs with prices higher than those for utility-provided connections*	*No social triggers cited in the desk research*	***Low affordability*** *of safe FSM services in LIAs*	***Frequent cholera outbreaks*** *due to unsafe emptying practices* ***Low coverage of safe service*** *provision by VTOs in PUAs* ***Low willingness to pay for safe services*** *in PUAs*
Economic	***High NRW rates*** *(~85%) from the theft of utility water in LIAs*	***High NRW rates*** *(~65%) from the theft of utilities' water by providers in LIAs*	***Utilities' lack of resources*** *to directly serve households* ***Opportunity to increase government revenue*** *through licensing fee charged to PWPs*	***KCCA's lack of resources*** *to directly serve households owing to budget constraints*	***LWSC's lack of resources*** *to directly serve households*

Notes:

- *The research did not present detailed data on triggers for Khulna and Sinnar, since the former did not have successful transitions and the latter was a targeted caselet.*
- *Coverage data was not available for the case study on southern Mozambique.*

Figure 26: Key actors involved in transitions

	Water			FSM	
	Kisumu, Kenya 	**Manila, Philippines** 	**Southern Mozambique** 	**Kampala, Uganda** 	**Lusaka, Zambia** 
TRANSFORMED FROM	*LIAs dominated by cartels illegally selling water at high prices*	*LIAs with unsafe and unaffordable water provided by informal vendors due to uncertain land rights*	*PUAs with inadequate utility supply and growing number of unregulated players providing water to unserved households*	*LIAs with low affordability of and access to safe services, primarily served by informal manual emptiers*	*PUAs with inadequate infrastructure for, and low accessibility to, safe services, primarily served by informal manual emptiers*
CHANGED INTO	*LIAs with affordable, safe water delivered by contracted operators to 25% of city's population*	*LIAs with affordable, safe water served by formally contracted organizations to 27% of city's population*	*PUAs with a large number of legal private water providers providing water under a single collective*	*LIAs with subsidized, safe services for 1% of city's population and a flourishing legally recognized collective*	*PUAs with access to subsidized, safe services for 2% of city's population*
KEY ACTORS					
Governmental actors	***KIWASCO**, the utility in Kisumu, implemented the DMM (a pro-poor program) to partner with operators in the LIAs to supply bulk water.* ***WASREB**, the national regulatory authority, approved tariffs for KIWASCO-led connections.*	***Manila Water**, the private utility in East Manila, implemented the TPSB (a pro-poor program) to partner with local providers in LIAs of East Manila.* ***MWSS-RO**, the local regulatory authority, mandated high coverage by private utilities.*	***DNAAS**, under the Ministry of Public Works, Housing, and Water Resources, drafted the licensing framework and service standards for PWPs.* *Utilities in each city (e.g. **ADRM** in Maputo) issued licenses to PWPs.* ***FIPAG** and **AIAS**, the asset owners, supported DNAAS in drafting the licensing framework.* ***AURA**, the national regulatory authority, released tariff guidelines for PWPs and enforced standards under the licensing framework on PWPs.*	***KCCA**, the city service authority, facilitated the formation of an SLP association, trained and licensed members, partnered with them through SLAs, and introduced subsidies.* ***NEMA,** the agency for monitoring Uganda's natural environment, regulated safe disposal and collaborated with KCCA to issue transportation licenses to SLPs.* ***NWSC**, the national utility, built and operated treatment facilities for safe disposal.* ***Ministry of Water and Environment** promoted private sector participation in sanitation at the national level to support the KCCA.*	***LWSC**, the utility, partnered with SLPs to provide safe services through a PBC, introduced subsidies, and built and operated treatment facilities.* ***NWASCO**, the national regulatory authority, assigned the mandate for providing FSM services to LWSC.* ***ZEMA**, the national environmental regulator, issued transportation licenses to SLPs.*
Local non-governmental actors	***Community-level committees** and **local leaders** acted as mediators between LIA residents and KIWASCO.*		***AFORAMO**, the association of PWPs, represented collective interests of PWPs and mediated between PWPs and government bodies.*	***The emptiers' association** held trainings and self-regulated members' compliance with safety standards.*	
International development organizations	***French Embassy in Kenya** co-financed (with KIWASCO) the pilot DMM project in one LIA of Kisumu.* ***WSP-Africa** facilitated and provided technical support for the implementation of the pilot DMM project.* ***WSUP** supported the scale-up of the DMM and the shift of DMM-management to the pro-poor services department within KIWASCO.*	***International Finance Corporation** and the **Asian Development Bank** introduced a financing facility for households for availing direct piped connections.*	***USAID SUWASA** supported DNAAS in drafting the licensing framework.* ***USAID SPEED+** prepared guidance manuals for PWPs on the licensing process.* ***USAID WASH-FIN** designed, financed, and implemented capacity-building initiatives for PWPs*	***WFP** equipped manual emptiers with Gulpers, conducted trainings, formed an association, and piloted a mobile transfer station.* *Several external funders (e.g., **GIZ, BMGF**) infused funds to support KCCA's activities over the years.*	***WSUP** trained manual emptiers, organized them under Water Trusts, and facilitated partnership of the Water Trusts with LWSC for safe emptying in two PUAs.* ***Stone Family Foundation and Comic Relief** funded the construction of treatment facilities in two PUAs.* ***World Bank** funded subsidies introduced with the PBC.*

Notes:

- *The research did not present detailed data on key actors for Khulna and Sinnar, since the former did not have successful transitions and the latter was a targeted caselet.*
- *Coverage data was not available for the case study on southern Mozambique.*

Figure 27: Key actions taken by ULBs and other stakeholders to implement transitions

	Water			FSM		
	Kisumu, Kenya 	**Manila, Philippines** 	**Southern Mozambique** 	**Kampala, Uganda** 	**Lusaka, Zambia** 	**Sinnar, India** 
TRANSFORMED FROM	*LIAs dominated by cartels illegally selling water at high prices*	*LIAs with unsafe and unaffordable water provided by informal vendors due to uncertain land rights*	*PUAs with inadequate utility supply and growing number of unregulated players providing water to unserved households*	*LIAs with low affordability of and access to safe services, primarily served by informal manual emptiers*	*PUAs with inadequate infrastructure for, and low accessibility to, safe services, primarily served by informal manual emptiers*	*Small town with lack of planned emptying and safe disposal, and FSM services provided by informal operators*
CHANGED INTO	*LIAs with affordable, safe water delivered by contracted operators to 25% of city's population*	*LIAs with affordable, safe water served by formally contracted organizations to 27% of city's population*	*PUAs with a large number of legal private water providers providing water under a single collective*	*LIAs with subsidized, safe services for 1% of city's population and a flourishing legally recognized collective*	*PUAs with access to subsidized, safe services for 2% of city's population*	*Small town with access to regular, safe emptying services provided by a single contracted private provider to 80% of city's population*
KEY ACTIONS TO IMPLEMENT TRANSITIONS						
Player	***To managed:*** • ***Partnered*** *with 23 master operators (MOs), previously cartel leaders, and ~200 kiosk operators, previously pushcart operators* • ***Trained*** *master operators in business and technical skills*	***To managed:*** • ***Partnered*** *with ~700 community groups called people's organizations* • ***Trained*** *people's organization in technical skills*	***To facilitated:*** • ***Discovered and licensed*** *~550 private water providers (PWPs) by leveraging AFORAMO, the formalized association of PWPs* • ***Trained*** *PWPs in business and technical skills*	***To facilitated:*** • ***Discovered, trained,*** *and* ***formalized*** *~100 VTOs and Gulper entrepreneurs through an emptiers' association* ***To managed:*** • ***Partnered*** *with ~11 VTOs and Gulper entrepreneurs through SLAs to provide safe services*	***To managed:*** • ***Partnered with*** *five VTOs and two Water Trusts (with 18 manual emptiers) through PBCs* • ***Trained, provided equipment and protective gear***	***To managed:*** • ***Partnered*** *with one mid-sized private player from a nearby city through a PBC*
Rules	***To managed:*** • ***Defined tariffs*** *to address affordability* • ***Formalized partnerships*** *through contracts and* ***enforced submission of monthly performance reports*** *to ensure compliance by operators*	***To managed:*** • ***Defined pricing guidelines*** *to address affordability* • ***Signed MoUs*** *with people's organizations to recognize their role* • ***Tested water quality*** *routinely to ensure compliance to safety standards*	***To facilitated:*** • ***Drafted licensing framework*** *to regulate the business of PWPs* • ***Defined differential tariffs*** *based on PWPs' electricity source through a national regulatory framework to address their viability*	***To facilitated:*** • ***Introduced a formalization process*** *to regulate SLP businesses* ***To managed:*** • ***Defined target markets*** *for partner SLPs* • ***Introduced subsidies*** *to address affordability*	***To facilitated:*** • ***Issued transportation license*** *to VTOs to formalize them and monitor their disposal practices* ***To managed:*** • ***Allocated target markets*** *for partner SLPs* • ***Defined tariffs*** *and* ***introduced subsidies*** *to address affordability*	***To managed:*** • ***Defined sanitation tax*** *to address affordability* • ***Defined target market and service schedule*** *for operators to ensure coverage of households*
Infrastructure	***To managed:*** • *Provided bulk water to operators through* ***utility network pipes*** • ***Created pro-poor services department*** *that managed the DMM and its MOs, and addressed customer concerns* • ***Carried out demand awareness campaigns***	***To managed:*** • *Provided bulk water to people's Organizations through* ***utility network pipes***	***To facilitated:*** • ***Set up water testing laboratories*** *for PWPs to test water quality and adhere to licensing standards*	***To managed:*** • ***Carried out a demand awareness campaign*** *and* ***sanitation mapping*** *of households* • ***Set up a call center, mobile application*** *with GIS tracking, and piloted a* ***mobile transfer station***	***To managed:*** • ***Set up treatment facilities*** *in two PUAs for safe disposal*	***To managed:*** • ***Set up a treatment facility*** *to ensure safe disposal of fecal sludge* • ***Created a mobile platform*** *to track customer feedback and monitor operators* • ***Carried out demand awareness campaigns***

Notes:

- *The research did not present detailed data on key actions for Khulna, since it did not have successful transitions.*
- *Coverage data was not available for the case study on southern Mozambique.*

APPENDIX E: GLOSSARY

Terms	Definition
Collective	An organization of SLPs managed by its own members. Collectives are usually created to lobby for collective benefits and are useful points of engagement between ULBs and SLPs. Collectives can be formal, such as associations or community-based organizations, or informal, like cartels.
Equity	The level of fairness in a system. Addressing equity accounts for the fact that some groups are more marginalized than others and require additional considerations to access or provide water and sanitation services. Equitable access to these services is critical as it also has implications on equitable access to opportunities and capabilities from a socio-economic perspective.
Fecal sludge treatment plant	A facility designed for the treatment of fecal sludge collected from non-sewered sanitation systems like pit latrines and septic tanks. They are built to encourage safe disposal and adequate treatment of fecal sludge.
Gulper	A semi-mechanical device used to pump fecal sludge from pits as an alternative to unsafe manual emptying.
Micro-markets	Areas or settlements within a city that receive the same type of service provision. These may be different from administrative units (e.g., wards or parishes) but are similar to "settlements" or "communities" within an urban area.
Performance-based contracts	Contracts that link SLPs' incentives to predefined performance indicators.
Peri-urban area	A region adjacent to a city or located at the periphery of an urban settlement. These are typically unplanned and comprise several informal settlements.
Resilience	The ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth.
Small local provider (SLP)	Local enterprises with fewer than 50 employees (part-time or full-time) that provide services in the absence of direct ULB-led service provision.
Target market	A subset of customers with shared characteristics (e.g., income, location, type of containment system for FSM) from the larger available market.
Transfer station	A decentralized facility SLPs use to dispose of fecal sludge, which is then collected and transferred to a centralized treatment facility. Transfer stations are usually built with the objective of reducing transport costs for SLPs where the distance between the fecal sludge treatment plants and the customer is large.
Urban local body (ULB)	A sub-national public institution that is mandated to provide water and sanitation services across the city to households, businesses, industries, and institutions. ULBs can be service authorities, such as city corporations, or service providers, such as public utilities, depending on the sector and context.
Vacutag	Portable machines used to mechanically empty and transport fecal sludge in high-density areas that are inaccessible by traditional vacuum trucks.

APPENDIX F: KEY CONTRIBUTORS TO THE STUDY

The research team would like to thank the following people for their contribution to the research:

Aasim Mansuri, Centre for Environmental Planning and Technology (CEPT) University

Abdillahi Swaleh Chebii, Master Operator, Kisumu Delegated Management Model

Alison Parker, Cranfield University

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Alma Porciuncula, Safe Water

Amanda Robertson, USAID/Kenya and East Africa

Angelo Ramos, *Autoridade Reguladora de Água* (AURA)

Anselmo Munhequte, AURA

Armando Abacar, USAID/Mozambique

Augusto Razulo, USAID Mozambique Transform WASH

Brad Carr, USAID Tanzania *Maji na Usafi wa Mazingira* Activity (MUM)

Carolyne Odero, KIWASCO

Claire Grisaffi, Cranfield University and WSUP

Clara Dimene, USAID/Mozambique

Curtis Muleya, National Water Supply and Sanitation Council (NWASCO)

Dhruv Bhavsar, CEPT University

Elsa Mejia, Inpart Water Services

Emanuel Owako, WSUP, Kisumu

Emily Woods, Sanivation

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Eng. Kasenga Hara, NWASCO

Frederick Agyemang, Safisana

Habibur Rahman, WSUP, Bangladesh

Humberto Gueze, AURA

Jeric Sevilla, Manila Water

Jigar Bhatt, Ex-Columbia University, Urban Planning Department

Joachim Ezeji, USAID/Nigeria

Joanne Dulce, USAID/Philippines

Joaquim Jorge, AURA

Joseph Magoya, Water for People (WFP)

Josiah Omotto, Umande Trust

Joy Riungu, Meru University of Science and Technology

Julian Musiime, KCCA

Julieta Paulo, AURA

Kamrul Islam, Gulshan Clean and Care

Kapanda Kay, Lusaka Water Supply and Sanitation Company (LWSC)

Kavita Wankhade, Indian Institute for Human Settlements

Kh. Farhad Hossain, USAID/Bangladesh

Kun Zhang, Athena Infonomics

Mahima Vijendra, Tamil Nadu Urban Sanitation Support Programme

Md. Abdul Aziz, Khulna City Corporation

Md. Irfan Ahmed Khan, *Stichting Nederlandse Vrijwilligers* (SNV) Bangladesh

Md. Tanvir Ahamed Chowdhury, SNV Bangladesh

Nancy K. N. Karanja, University of Nairobi

Nandita Kotwal, Sanivation

Nelson Cumaio, *Associação de Fornecedores de Água de Moçambique*

Paul Kimera, Technology for Tomorrow

Pedro Simone, Water, Sanitation, and Hygiene Finance Program (WASH-FIN) Mozambique

Phillip Soboya, Lusaka Pit Emptiers' Association

Poonam Sewak, Safe Water Network, India

Prevelyn G. Gazmen, Manila Water

Pride Kafwembe, LWSC

Ramakrishna Paul, Athena Infonomics

Reginald M. Andal, Manila Water Foundation

Ricardo Amos, AURA

Rosemary Campbell, WSUP

Shahidul Islam, SNV Bangladesh

Shaka Bakabulindi, The Association of Uganda Emptiers Limited

Sheila Kibuthu, Sanergy

Sheillah Simiyu, African Population and Health Research Center

Sibongile Ndaba Luwabelwa, Research Triangle Institute International

Trigeany Linggoatmodjo, USAID/Indonesia

Yvonne Lugali, WFP

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U.S. Agency for International Development
1300 Pennsylvania Avenue, NW
Washington, DC 20523
Tel: (202) 712-0000
Fax: (202) 216-3524
www.usaid.gov