Public Disclosure Authorized
Public Disclosure Authorized
Public Disclosure Authorized

SHARED AND PUBLIC TOILETS

CHAMPIONING DELIVERY MODELS THAT WORK

Rachel Cardone
Alyse Schrecongost
Rebecca Gilsdorf

Public Disclosure Authorized

WORLD BANK GROUP

About the Water Global Practice

Launched in 2014, the World Bank Group's Water Global Practice brings together financing, knowledge, and implementation in one platform. By combining the Bank's global knowledge with country investments, this model generates more firepower for transformational solutions to help countries grow sustainably.

Please visit us at www.worldbank.org/water or follow us on Twitter @WorldBankWater.

About the Citywide Inclusive Sanitation Initiative

The Water Global Practice, in conjunction with sector partners, has developed an approach to urban sanitation termed Citywide Inclusive Sanitation (CWIS). This comprehensive approach aims to shift the paradigm around urban sanitation interventions by promoting a range of technical solutions that help ensure everyone in a city benefits from safely managed sanitation service delivery. The CWIS approach integrates financial, institutional, regulatory and social dimensions, requiring that cities demonstrate political will and technical and managerial leadership to identify new and creative ways of providing sanitation services for all.

SHARED AND PUBLIC TOILETS

CHAMPIONING DELIVERY MODELS THAT WORK

Rachel Cardone,
Alyse Schrecongost,
and Rebecca Gilsdorf

© 2018 International Bank for Reconstruction and Development / The World Bank

1818 H Street NW, Washington, DC 20433

Telephone: 202-473-1000; Internet: www.worldbank.org

This work is a product of the staff of The World Bank with external contributions. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank, its Board of Executive Directors, or the governments they represent.

The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Rights and Permissions

The material in this work is subject to copyright. Because The World Bank encourages dissemination of its knowledge, this work may be reproduced, in whole or in part, for noncommercial purposes as long as full attribution to this work is given.

Please cite the work as follows: Cardone, Rachel, Alyse Schrecongost, and Rebecca Gilsdorf. 2018. "Shared and Public Toilets: Championing Delivery Models that Work." World Bank, Washington, DC.

Any queries on rights and licenses, including subsidiary rights, should be addressed to World Bank Publications, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; fax: 202-522-2625; e-mail: pubrights@www.worldbank.org.

Cover photos: © Kathy Eales / World Bank, Mirva Tuulia Moilanen / World Bank.

Cover design: Trese Gloriod, Graphic World, Inc.

CONTENTS

Figures

Tables

ABBREVIATIONS

BOT	build-operate-transfer
CAPEX	capital expenditures
CBO	community-based organization
CWIS	citywide inclusive sanitation
DBO	design-build-operate
FSM	fecal sludge management
GBV	gender-based violence
GPS	global positioning system
IHHT	individual household toilet
JMP	Joint Monitoring Programme
MHM	menstrual hygiene management
NGO	nongovernmental organization
OD	open defecation
PA	Practical Action
SAIS	School of Advanced International Studies
SAT	stand-alone toilet
SDGs	Sustainable Development Goals
WSUP	Water and Sanitation for the Urban Poor

ACKNOWLEDGMENTS

This primer benefited from contributions of literature as well as experience and feedback on initial and later-stage drafts from many people. We are grateful for contributions and insights from conversations with Tanvi Nagpal, Meera Mehta, Dinesh Mehta, Neil Macleod, M. Elangovan, Prof. V. Srivinas Chary, and Swapnil Chaturvedi, the excerpts of which are captured in several examples provided throughout. Georges Mikhael and Baghirathan Vanniasingham provided deep insight from their extensive experience and shared useful literature and case studies from Water & Sanitation for the Urban Poor's (WSUP) work as well as constructive feedback that shaped the process. We also extend gratitude to Christopher Ancheta, Gulilat Birhane Eshetu, Edkarl Galing, Peter Hawkins, Chris Heymans, Bill Kingdom, Maraita Listyasari, Sanyu Lutalo, Nishtha Mehta, Joseph Ravikumar, and Yitbarek Tessema, who provided extensive and useful feedback for the development and drafting of this piece. Finally, we are very thankful to Shafick Hoossein and Martin Gambrill for their consistent support and valuable advice throughout the development process.

All omissions and errors rest with the authors.

1. INTRODUCTION

The Sustainable Development Goals (SDGs) call for universal sanitation access and ending open defecation by 2030. Shared toilet models are not currently an acceptable form of safely managed sanitation. The ambition for the goals is thus set against an urban reality where hundreds of millions of people regularly rely on shared toilet models, but aren't counted, and where policy makers lack incentives to support shared toilet models, even when these are more suitable, for technical and geographic reasons. The alternative to not having any form of sanitation is open defecation, with associated human and environmental health impacts. The logic behind the exclusion of shared toilet models is that they fail to deliver safe sanitation services to their users. For example, there is evidence that health outcomes from shared models are worse than from individual household toilets. The market structure and underlying dynamics that cause shared toilet models to succeed or fail are messy and often context specific, which makes shared toilet models hard to justify at a global level. Still, there are examples where shared toilet models can and do work and are preferable to individual household toilets. Often, models that provide safely managed sanitation have evolved through deep community engagement, iterative experimentation with facility design, adaptation of the delivery model to meet user needs and preferences over time, and reliance on a financially viable revenue model.

This document aims to inform early considerations and decisions that planners and policy makers must weigh when considering whether and how to pursue shared toilet models as an improvement to the status quo or how to improve existing shared toilet models. The intended audience is policy makers and others who are tasked with improving urban sanitation and advancing city-wide inclusive sanitation (CWIS) but who may not have extensive experience working on these issues. It includes an overview of shared toilet models, brief examples, checklists, high-level decision trees, and tips based on research and experience. It is accompanied by a series of appendixes, which offer a summary of findings from a literature search, additional graphics, and a checklist of things to consider when planning, implementing, and managing shared toilet models. It is built on an assumption that with an experimental mindset and operational flexibility to innovate, shared toilet models can offer safe sanitation services as part of CWIS and contribute meaningfully to the SDGs.

Notably, this document does not explicitly address container-based sanitation service models, which are evolving to meet urban sanitation needs for shared and individual household situations. This topic is the subject of a separate World Bank report titled *Evaluating the Potential of Container-Based Sanitation* (forthcoming). Nor is this document a stepwise guide to implementing shared toilet models, considering legal, regulatory, policy, financial, technical, and social issues.[1] Rather, it offers a pragmatic introduction to the *starting* questions a policy maker or planner should ask.

Report Structure

Because of the diversity of approaches used to deliver sanitation services, and the corresponding diversity of needs and enabling environments, shared toilet models were considered from four perspectives:

- The context in which sanitation services are needed
- Toilet users' needs, including urban residential use and the varying needs of users as they move around the city throughout each day
- Service providers, who provide cleaning and maintenance services of shared household, community, and public toilets and sometimes the infrastructure and financing for the facilities

Figure 1.1 • Decision Point Indicators for Decision Frameworks

- Service authorities, or the government entities responsible for ensuring that services are provided and basic sanitation needs are met

For each of these perspectives, opportunities and challenges are presented, and questions to consider in decision making are prompted. Where possible, these are distilled into high-level decision frameworks, using decision point indicators shown in figure 1.1.

Other features offering context and support—summarized in figure 1.2—include high-level checklists, tips, case studies, and references to tools and resources. These features are meant to briefly flag or illustrate important points and direct the reader to additional information sources, rather than offering a comprehensive and exhaustive guide.

Key Findings and Emerging Ideas about Shared Toilet Models

The following is a brief summary of findings, drawing from an extensive literature survey. A longer analysis of findings is provided in appendix B; literature surveyed is provided in appendix E.

Individual household toilets

Individual household toilets (IHHTs) are, in general, a preferred toilet choice for residential settings (Norman 2011) and lend themselves best to continued operation and management, which is better for privacy, dignity, and public health. To the extent IHHTs can be pursued to meet the basic sanitation needs of residential households, they should be.

However, IHHTs are not technically feasible in many low-income, urban communities. IHHTs are not suitable in areas with extremely high population density, where there is no space in basic housing structures, and where multiple households cohabitate and overwhelm IHHT design capacity. Standard designs are less feasible in areas with high water tables or bedrock, where creating a safe containment space for fecal sludge is cost prohibitive for households, service providers, and service authorities. Where IHHTs are not connected to a sewer, complementary containment infrastructure and access to a full fecal sludge management chain (in essence, service for emptying and transporting contained waste, as shown in figure 2.2) is a necessary precondition for viability.

CHECKLISTS •

- Offer question prompts for use during planning and consideration during implementation as well as for ongoing management to ensure sustainable services are achieved

TOOLS & RESOURCES •

- Summary and hyperlinks to existing tools for use in planning, implementation, and management of different toilet models
- Recommended reading and resources for further information

TIPS •

- Things to consider or watch out for, based on common experiences with planning, implementing, and managing different toilet models

CASE STUDIES •

- Quick examples to illustrate points in the text or that represent interesting models or approaches
- Links are included for further exploration

Figure 1.2 • Features Linking Analysis with Action

De facto or de jure land tenure insecurity can preclude household and landlord investment in IHHTs. Migrating populations, informal settlements, and layers of informal tenure and management rights agreements limit household willingness to invest in IHHTs. Policy mandates for landlords to provide toilets can help, along with policies that decouple the right to basic services from land tenure claims. However, implementation of such policies is often slow, uncertain, and politically charged.

Safe IHHTs are not always affordable in very low-income areas. In many cases, even if supported by subsidies or microfinance, individual households do not have the financial ability to invest in a safe toilet and containment system or to pay for basic maintenance.[2]

Shared, community, and public toilets

Shared household and community toilet models offer alternatives to IHHTs for residential use. In practice, they are currently the prevalent—if not dominant—form of urban sanitation in low-income and informal areas. Over 700 million people use shared household, community, or public toilets as their primary form of sanitation (Heijnen et al. 2014). For many, the only alternative is to openly defecate (Peprah et al. 2015).

Residential use is only one of multiple sanitation needs experienced by users throughout their day. Individuals must have access to safe, convenient sanitation when they are outside their houses and going about their daily routines: at transportation centers, like bus or train stations; at their places of employment; at markets and stores where they shop; in schools and clinics and other administrative centers (for example, to pay bills); and at centers of religious and cultural activity.

Most experience with shared toilet facilities suggests they fail due to lack of an enduring management model to support maintenance. There tends to be weak or absent planning for long-term service provision, weak accountability between users and service providers, and missing, or at best inconsistent, revenue streams to ensure continued operations.

Evidence from shared toilet models shows they yield limited to no improvement in health outcomes over open defecation and are demonstrably worse than IHHTs (Heijnen et al. 2014). However, this review did not find any systematic reviews of health outcomes by

management model or by shared facility type. Rather, when shared toilets are not maintained properly—from provision of anal cleansing materials, facilities for menstrual hygiene management, sanitized toilet stalls, lighting, and handwashing stations—health outcomes for users are compromised. When the facility is not connected to a sewer or fecal sludge management system, to remove fecal matter, health outcomes are also compromised. When maintenance falls below a certain threshold, users switch to an alternative, which is often open defecation. It is important to consider that the same holds true for IHHTs.

Successful shared toilet models all involve ongoing support from the public sector, in the form of a service authority providing leadership, and generally public (or donor-backed) finance. This is true in terms of both the quantity of facilities provided and the quality of services, particularly for the most vulnerable populations. In practice, successful, private sector–driven toilet models, particularly those that serve the poor and those serving residential users, still require considerable external investment, whether through philanthropic investments or government subsidies. Political will, combined with well-designed government policies, regulations, and programs, are required to address these market failures. Public toilet models in areas with high pedestrian traffic can sometimes be independently financially viable but tend to provide quality and adequate service levels only if a service authority structures the market to ensure this.

Political will and functional systems for transparency, monitoring, and accountability, at multiple levels of government, are necessary enabling conditions for quality services to be provided and sustained at scale. Donor-funded pilot projects, or donor-backed, enterprise-driven approaches, may be extremely successful and even scale within a community, but without the engagement of government, these models are unlikely to generate the impact needed to achieve CWIS.

Sanitation service failures are often a result of inadequate planning, poor program implementation, and weak accountability mechanisms among users, service providers, and service authorities. These failures reflect underlying limitations in governance, facility management models, or viable financing and revenue models. More successful models have clearly defined and shared expectations about service levels, required contributions, and consequences of failure to deliver (for example, on payments, in-kind contributions, or service levels). Service level agreements, when both monitored and enforced, can incentivize meeting agreed-on goals and targets and give private providers space to be creative with *how* they meet them. Examples include service providers that stack multiple revenue streams, community-based management structures, and creative community engagement and education efforts.

Despite their failings, shared toilet models have a role to play as part of CWIS, whether as an intermediary option until IHHTs can be provided for residential use or as a service to urban populations as they move throughout their days. Although current experience of viable shared toilet models is limited, there is a clear opportunity for innovation and experimentation across contexts to meet the needs of the hundreds of millions of people who depend on shared toilets to meet their basic sanitation needs.

Notes

1 More detailed guidance can be found elsewhere, including the Sustainable Sanitation Alliance (http://www.susana.org) and WSUP's website (http://www.wsup.com/programme/resources/). Additional technical guidelines are sometimes available at individual country and city levels.

2 Financial ability is influenced by the complex socioeconomic dynamics at play in informal areas, including tenancy, sharing facilities, land tenure, and level of education (Simiyu et al. 2017).

2. SHARED TOILET MODELS IN URBAN SANITATION

What Is a Shared Toilet Model?

Shared toilet models refer both to the facilities and management models that provide sanitation services to groups of households, or, in the case of public toilets, to the public. For the sake of comparison, individual toilets for use by a single household are known as **individual household toilets,** or IHHTs. Shared toilet models tend to be applied to three general categories of infrastructure characterized by use. Toilets shared by a small defined number of households are referred to as **shared household toilets**. Toilet blocks that serve many households in a residential area, and that may offer shower and laundry facilities, are referred to as **community toilets**. **Public toilets** refer to facilities open to all users who are in transit or otherwise away from home.

In practice, shared toilet delivery models can work across a range of physical structures: a shared household model can be found in community toilet blocks; community toilet models can be found in public places; and public toilet models can be blended with community toilet blocks. What matters is achieving performance standards: that the toilet facility is clean and appealing; that it provides adequate, equitable, and hygienic services to everyone; that it operates on a financially viable basis; and that it responds to the needs of its users.

Urban sanitation services in low-income areas are a long-neglected area for investment and policy, from local to global levels. As attention and experience grow, how we define shared toilet models, and measure their success or failure, may become more firmly bounded. This document aims to contribute a user-centric definition of shared toilet models. It also differentiates shared toilet models from shared toilet facilities wherever possible, to call attention to the common experience of physical sanitation assets failing because of failed management models—and to draw attention to the opportunity for physical assets to be revitalized with alternative, and more suitable, management and revenue models that meet customer needs and preferences.

Introduction

Appreciating the definition provided above, urban sanitation in low-income areas falls all along the continuum between shared and public. It should not be a surprise that many people in urban areas avail themselves of multiple shared toilet models as they move through their days. For this reason, definitions of shared household, community, and public are made based on the type of use for which the facility was initially designed: where the toilets are located, in terms of target users, and the underlying rationale, or market forces for why the toilet exists (see figure 2.1).

Definitional clarity is important primarily because an inclusive, citywide approach to sanitation requires a mix of IHHT, shared household, community, and public toilet models, sometimes in the same, or adjacent, neighborhoods. ***A policy goal should be that the users' basic experience of the service is consistent regardless of the model used: users should enjoy a clean, hygienic, and private environment that ensures safe collection, treatment, and disposal of human excreta and all wastewater.***

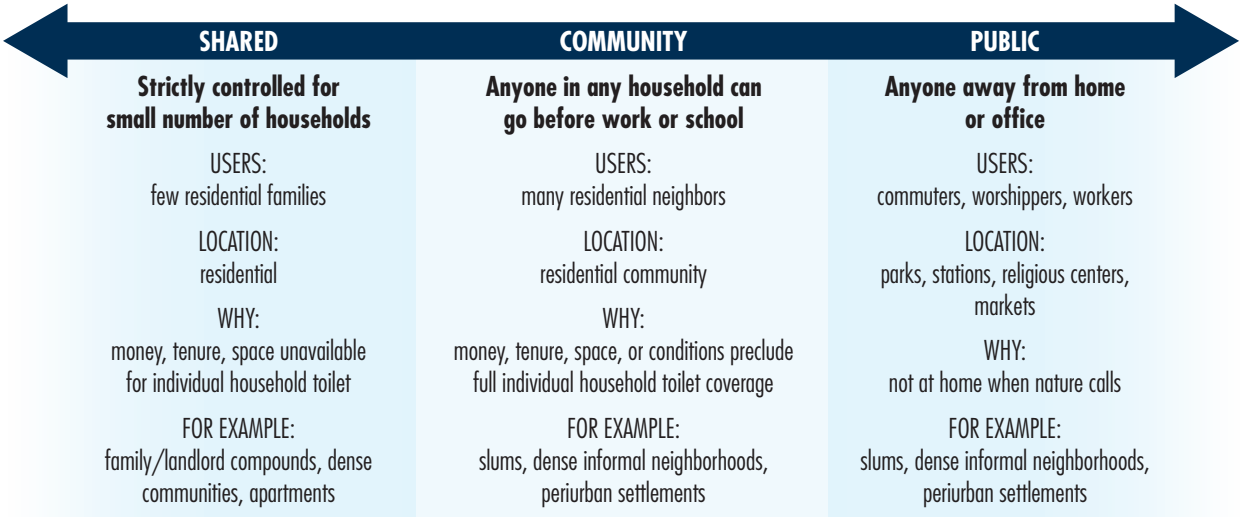


Figure 2.1 • A User-Centric Approach to Defining Toilet Models as Used in This Guide

Note: HH = household; IHHT = individual household toilet.

TIP • When working in a specific country or region, find out how different shared toilet models are defined in that local context, as well as how local practitioners define users, location, and market forces that underlie the model. It is worthwhile to verify definitions regularly to ensure continued alignment throughout planning and decision-making processes.

Toilet models are one segment of the sanitation service chain

The models identified above are variations on how users access basic sanitation services throughout the day. It is equally important to consider how the waste is managed post-defecation. If there is a sewer line, does it connect to a treatment facility? How are urine and fecal matter contained throughout the sewer network to limit public health risk? If a sewer line isn't present, and if toilet users use water to wash, where does that water go? If toilet users use paper, where does the paper go? How is menstrual hygiene addressed? What happens when the containment device is full? Who empties it? Where does waste in the containment device go? What happens next?

The long-term viability of any toilet model in an urban context depends heavily on the existence and strength of the sanitation waste management system, whether sewer-based or not. In low-income countries, access to waterborne sewerage and treatment facilities is limited. Where waste is not conveyed by sewers, the current safe alternative is fecal sludge management (FSM). FSM systems manage waste by ensuring fecal sludge is safely contained on site, emptied, safely removed, and transported to a treatment facility. There, it can be processed for resource recovery and reuse or safely disposed of (figure 2.2).

As part of upstream design and feasibility work for a potential sanitation investment, significant consideration should be given to the state of FSM and whether an appropriate chain can be established before containment devices become full. Likewise, for an FSM service chain to work, containment devices need to be well constructed and not leak.

Figure 2.3 provides a high-level decision tree connecting shared toilet models with the sanitation service chain.

RESOURCE • Fecal waste flow diagrams (also known as SFDs) help planners understand how much fecal contamination is generated in a city or town and how it moves through the sanitation service chain, from capture to treatment and end use/disposal. This includes the path of waste through sewer-based and non-sewer-based systems, leakages, service gaps, and prevalence of open defecation. This allows planners and decision makers to see, for example, the level and points at which fecal contamination ends up being released untreated into the environment. It can also help identify where interventions are needed to improve sanitation service delivery. The SFD tool provides guidance on what data to collect, an input form, and a graphic generator. It also provides examples of completed SFDs from cities around the world. For more information, see http://sfd.susana.org.

Shared toilet models in the wider urban management context

Cities are dynamic places, and in unstable and informal areas, a targeted area may change well before a long-term infrastructure program is complete. For this reason, designing for citywide inclusive sanitation (CWIS) requires an understanding of how neighborhoods fit within and are affected by wider growth and development trends and city-scale investment plans, beyond the sanitation service chain. For example, dense, unplanned settlement communities with high water tables are likely to need some degree of shared sanitation services for some, if not all, residents. These communities may be scheduled for formalization, relocation, or provision of other basic services that eventually may enable safe investments in IHHTs. If so, promoting IHHTs with on-site sanitation technologies in the interim could be an inefficient use of public and household resources.

Ongoing or planned activities may include upgrading or moving physical infrastructure, such as piped water supplies, roads, and electricity, including street lighting. There may be plans to extend telecommunications infrastructure and solid waste management, which could create opportunities for leveraging technology to support sanitation (for example, to support logistics and mobile payment or optimize waste transport routes and

TIP • There is consensus that the construction costs of community and public toilet blocks are a valid public investment, whereas public investment in IHHTs is classified more normatively as a subsidy for the poorest and is persistently questioned. The public health and safety gains associated with locally accessible, clean, and safe household sanitation should be included in analyses comparing different public investment options. Given the high rates of failure seen across shared toilet models, and the clear benefits of on-site urban IHHTs to protect public health, it makes sense for cities to consider the full suite of toilet options to achieve the SDGs using cost-benefit analysis and other decision support tools.

Figure 2.2 • The Sanitation Service Chain

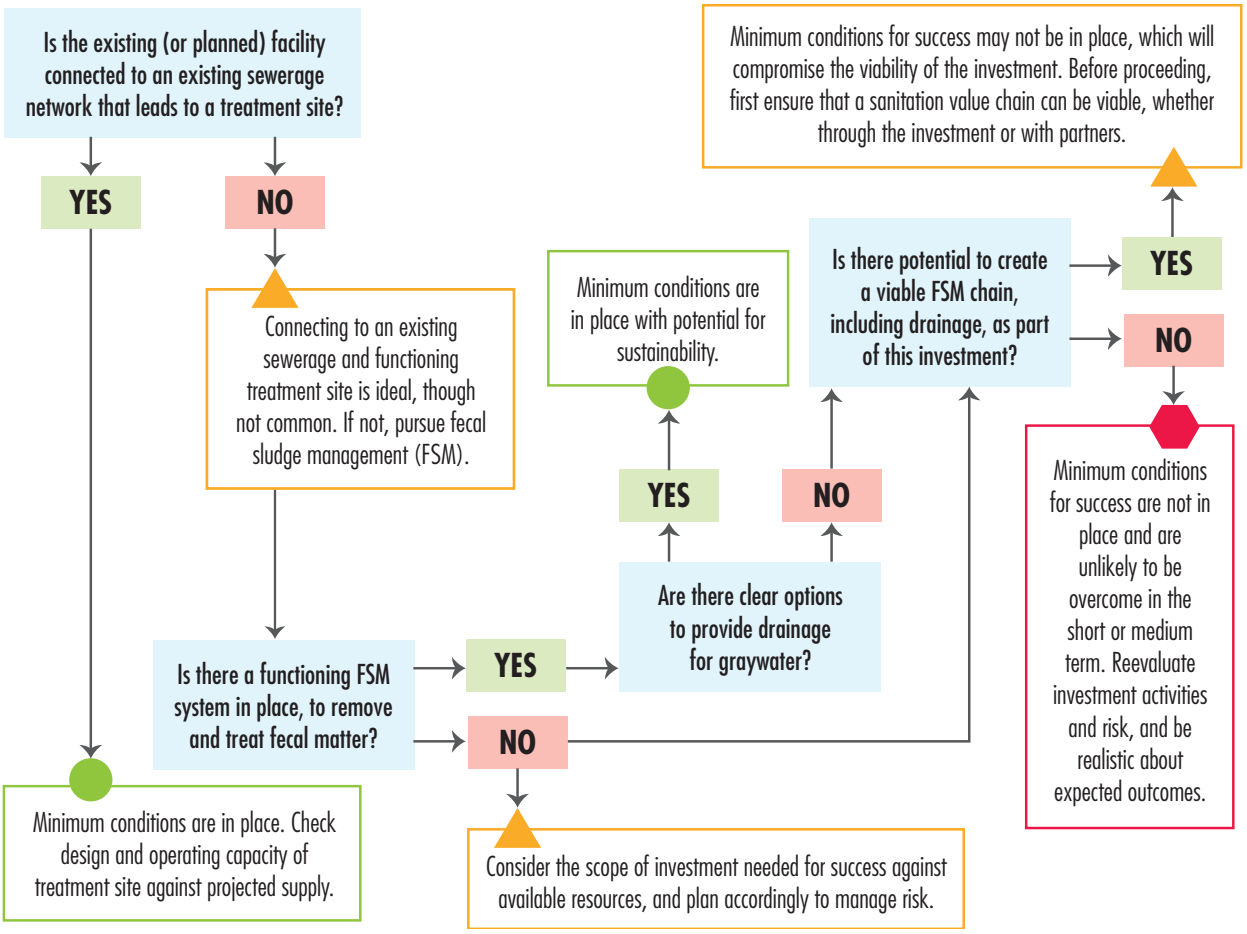


Figure 2.3 • Decisions and Alternatives Connecting Toilet Models with the Sanitation Service Chain

transfer stations). It may also include social infrastructure, defined as investments and programs that target those who are most in need. All of these types of municipal infrastructure can influence, or be influenced by, the establishment of shared, community, or public toilets.

It is also worth looking for operational benefits. Cooperation across municipal departments can yield financial efficiencies as well as mutual benefits for users, service providers, and service authorities. Integrated planning processes should strive to ensure that planning and investment strategies include a mix of vulnerable and high-, middle-, and low-income populations in a given planning period, rather than stratify rollout based on social class or economic standing. A CWIS framework that appreciates the real and perceived risks of working in lower income areas will seek to identify smaller and flexible budgets to test and iterate physical designs and delivery models to meet user needs and preferences to include lower income and vulnerable populations in planning and investment cycles.

EXAMPLE • In Maputo, Mozambique, a team of researchers from the School of Advanced International Studies (SAIS) at Johns Hopkins University and the Urban Institute sought to track down actual municipal financing expenditures for sanitation as a starting point for identifying ways to increase municipal financing for sanitation in low-income areas. In a city where less than 10 percent of the population is connected to sewers, local investment for sanitation tends to target those who are already connected to the utility network. Responsibility for water and sanitation at the municipal level is very confusing, with overlapping authority for two main trunk sewers, municipal drains, and the neglected sewage ponds at Infulane. The Municipal Council currently conducts no activities to improve on-site sanitation—it owns two decades-old desludging trucks, of which one works for about a quarter of the year. After much investigation, the team found that much of the Municipal Council's expenditures earmarked for the "maintenance of streets and the sanitation network" goes to the former. Meanwhile, households in informal and non-networked areas are responsible for digging and maintaining their own toilets. They use informal providers to clean out tanks. It is unclear where these trucks empty the collected waste. It is possible that it ends up in the one of the city's two main sewer trunks. It is also possible that it ends up in the environment. Source: *Interview with Tanvi Nagpal, SAIS.*

EXAMPLE • Gramalaya's community toilets in Trichy, Tamil Nadu, India, offered critical amenities to the low-income communities they served. When toilets were first installed, a nongovernmental organization (NGO) engaged and trained women's cooperatives to eventually manage the operation, maintenance, and finances. Users paid a small fee for use. As communities benefited from Swachh Bharat Mission investments to install networked IHHTs, use of the facilities declined. Management adapted, rather than giving up. Because the nature of these communities is changing with urbanization, the toilets are able to grow their customer base and revenue streams by engaging flows of daily workers in transit (in essence, they moved from being community facilities to public facilities). Source: *M. Elangovan, Gramalaya executive director.*

3. UNDERSTANDING THE SANITATION MARKET

The state of sanitation in most cities is rapidly changing and multifaceted, with a mix of existing networked and non-networked services in varying conditions and sizeable areas where services are failing to nonexistent. Conducting a city sanitation assessment, or a situational analysis, is a good first step to planning, implementing, or managing shared toilet models, regardless of whether the goal is for a new greenfield project, a renovation or upgrading of existing facilities, or an adaptation of a delivery model using existing physical infrastructure.

The purpose of a city sanitation assessment is to facilitate strategic planning and investment prioritization. Often conducted as a rapid assessment by consultants in partnership with local stakeholders, the assessment should provide planners an understanding of physical and infrastructure characteristics; a stakeholder map that identifies key relationships, incentives, and limitations to success; a mapping of financial flows into sanitation services; and an assessment of the security and stability of those flows. This assessment forms a foundation for understanding which areas of the city are suitable for shared toilet models and where they should be prioritized for investment.

An assessment should also include a detailed analysis of stakeholder groups and subgroups who are critical to the assessment process. Generally, these include the people who use the toilets (subgroups include low-income populations, those with disabilities, women, children, and other marginalized and vulnerable populations); individuals and organizations (service providers) that maintain and manage toilets on a public, private, or nongovernmental organization (NGO) or community-based organization (CBO) basis; and the service authorities that are ultimately responsible for ensuring that citizens/consumers have access to sanitation services (may include utilities, regulators, or elected officials).[1] A stakeholder

Key elements of situational assessment

- Physical, demographic, and climactic attributes of the city
- Primary elements of the built environment and coverage of other basic utility services
- Sanitation assets—for the full service chain, conditions, and critical gaps
- Key stakeholders and their relationships to one another within the housing and sanitation service markets
- Key financing flows and sources of finance for both up-front and recurrent costs
- Key policy, legal, and political factors that shape the enabling environment
- Other local issues that influence programming and service levels

TIP • Although it may be useful to bound a sanitation situation assessment based on political or administrative boundaries, it may also perpetuate the marginalization that contributes to poor sanitation in the first place. Need for sanitation should be grounded in practical realities, which likely means high-growth peri-urban areas, including informal areas. Mapping need against administrative or service boundaries of a city or utility can identify institutional gaps as well as actual service gaps. It may also identify opportunities for revenue, if residents can be engaged as new paying customers enable success.

analysis will seek to understand the incentives, constraints, beliefs and norms, and resources of these groups and subgroups, as well as the human, financial, and technical resources they have or to which they have access. It will also identify and assess the relationships among stakeholder groups, as well as how the groups are represented in formal and informal governance processes and by whom. Often, it is beneficial for stakeholders or their representatives to be engaged directly as partners in the assessment, not just as subjects of the assessment.

Understanding the dynamics between users, service providers, and services authorities is another layer of analysis that a situation assessment should seek to uncover. Mapping how things work is a first layer. Working to understand *why* things work the way they do—and to whose benefit—will offer a more nuanced perspective to inform exploration and experimentation of what might work to improve services. Scrutiny of formal and informal policies, laws, and norms is needed to understand what enables or constrains choices for users as well as service providers, along with the financial, regulatory, and political systems in place that can incentivize failure or success of sanitation services.

A useful assessment will also map where sanitation services are missing, either because they never existed or because of failure. It will also seek to define failure from the perspective of different stakeholders, as a basis for determining basic standards and expectations for planned sanitation services. It will identify where, geographically and socially, gaps result in open defecation and why. A complementary asset inventory that covers the full-service chain also provides important data to inform the analysis.

Characteristics of an asset inventory

- Capture ownership, management, and condition of sanitation assets across types of toilet models across the city
- Capture ownership, management, and condition of sanitation assets for emptying and conveyance systems and treatment infrastructure across the city
- Reflect gaps in service provision, including maps of open defecation areas and areas not accessed by or inaccessible to conveyance equipment
- Are GPS-based and can feed into other city data management systems (that may exist) for managing public services and investment planning
- Are designed to communicate with other mobile technologies being used by the city

Although a situational assessment can address many factors, it also must have a sufficient level of detail to inform an investment planning process. This planning process should be conducted with more detailed community engagement. Initial questions for setting high-level direction of subsequent investment planning within an area include:

- Which users lack sanitation services (for example, residents, workers, migrants)?
- To what extent are household toilets technically viable in this area?
- Are nontechnical constraints like land tenure insecurity, rental markets, and other market/institutional challenges likely to be addressed in a reasonable time frame?

TIP • Profiles of users of shared household, community, and public toilets in low-income, urban areas are likely to change over time because of changing tenancy, employment, health, and other socioeconomic or political factors. The steady influx of new residents implies a need for regular outreach to potential users to inform adaptations to the toilet model (for example, adaptations to operational factors or revenue/cost structure) and to market and communicate the value and benefits of the toilet service to new users.

- Are individual household toilets (IHHTs) currently being used as shared household toilets? If yes, can better designed shared household toilets offer a viable alternative to IHHTs?
- Are community and public toilets connected to a sewer network or accessible for emptying and transport of excreta?
- Can existing community or public toilets be refurbished or upgraded to improve viability?
- Is there a clear management model for adding new shared toilet facilities? Does it align with existing land tenure and involve minimal additional capital expenditures?
- Are public sector agencies willing and able to offer subsidies to offset capital or operating costs?
- Is there a well-defined mechanism for holding service providers accountable for delivering against target service levels?
- What community organizational or business stakeholders may be engaged to provide services or provide oversight?

Key ways to integrate women into sanitation planning, implementation, and management

- Citywide inclusive sanitation portfolio assessment of assets, investments, programs, and policies, including sex-disaggregated data and indicators and information on gender-specific infrastructure and service needs
- With communities, create programs or initiatives focusing on gender-based barriers to sanitation access for women and men, including issues like power dynamics in the household, agency, mobility, and control over resources
- Pay attention to menstrual hygiene management needs and how these are incorporated into the sanitation service chain
- Leadership training for men and women working across sanitation to build and strengthen consciousness about gender inequality at all levels and implications for achieving health and other outcomes

EXAMPLE • The city of Warangal, India, is re-envisioning itself and seeking to become a model clean city. A sanitation assessment included an inventory of open defecation sites throughout the city, including the urban core. The assessment identified vacant lots near institutional settings like hospitals and government buildings that were being used for defecation by hundreds of people per day. This "footfall market" was estimated and used to attract private companies to compete for the rights to build public toilets on a build-operate-transfer (BOT) basis. The city allocated land, but the companies invested all construction and operating expenses. Service levels are set within contracts, and operators can be penalized or lose their operator rights if inspectors find significant and repeated infractions to the agreement. As a result, the city and its residents benefited from the construction of nearly 60 new public toilets throughout the city, with little to no capital investment from the city.

Also because of the sanitation assessment, the city requires all petrol stations to provide on-site restrooms for free to customers and surrounding residents. Nearly 20 facilities were opened within a year, at no capital cost to the city. What is important is that a sustainable model for building and operating community toilets is needed but has not yet been demonstrated. Source: *Interview with Professor V. Srivinas Chary, Administrative Staff College of India.*

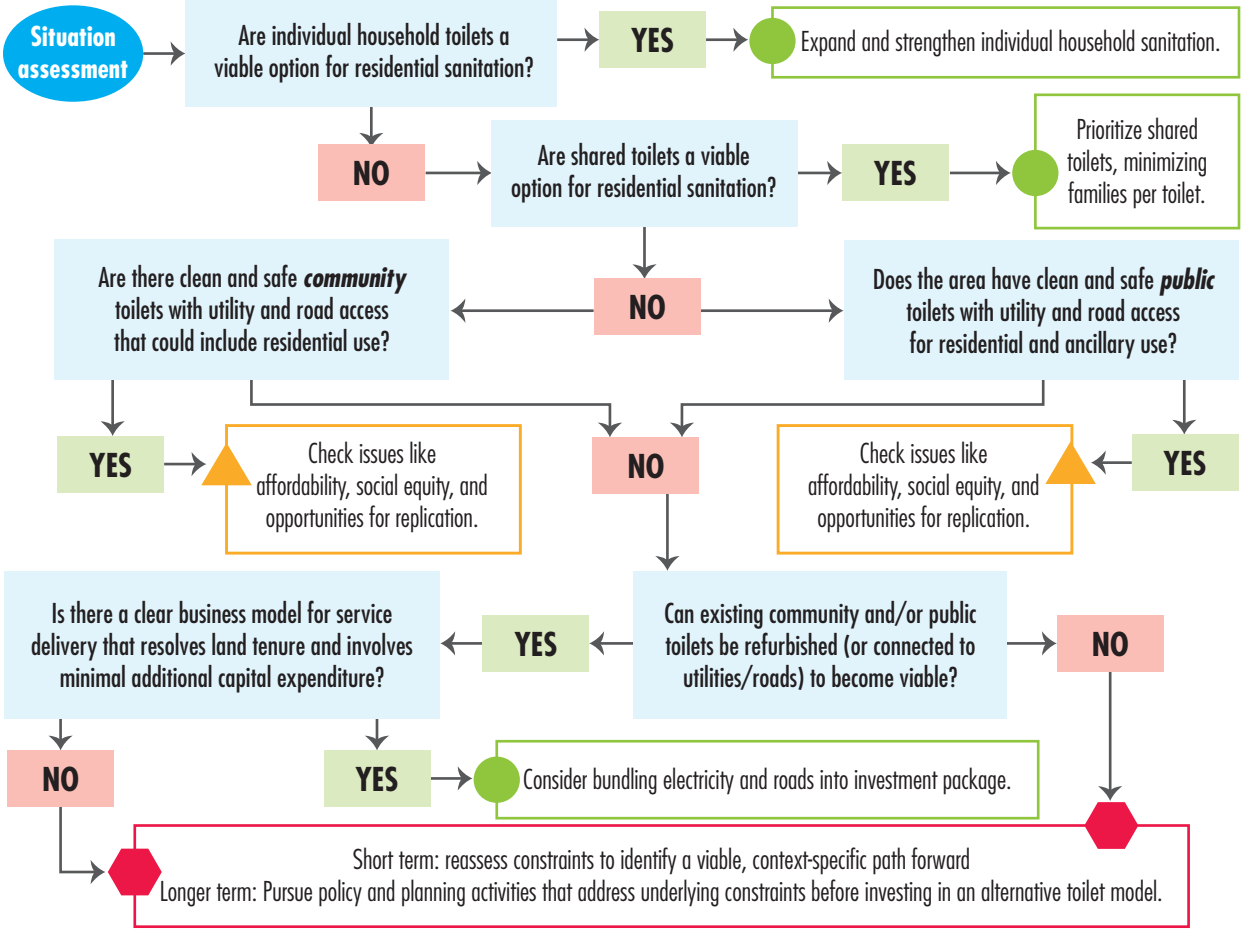


Figure 3.1 • Decisions and Alternatives to Guide a Situational Assessment for Residential Sanitation

Figure 3.1 provides an indicative decision tree based on these questions. In many cases, the answer will not be a clear yes or no. As a result, spending time acquiring and analyzing the data can help decision makers conduct a more nuanced analysis.

TIP • A review of laws, policies, and programs that influence sanitation service provision must reach beyond sanitation-specific institutions. Institutions with a focus on gender, land tenure, poverty reduction, education, and business development (for example, small and medium enterprise development and business licensing), as well as different types of utilities (for example, water, solid waste, electricity for lighting), are among those likely to influence sanitation services—in some cases by omission of clear statements on the issue. Understanding the policy environment for shared toilet models is important. Adopt a pragmatic approach with a goal of clean, reliable, and accessible services. Then, identify discrete barriers to success, find and test solutions, and keep an eye on where policy is needed to enable success.

RESOURCE • Many tools exist to support sanitation situation assessments. For example, the Fecal Sludge Management (FSM) Toolbox is a growing and evolving compendium of assessment, planning, and investment tools for urban sanitation. It includes various organizations' financial modeling and regulatory/institutional assessment tools, many of which address community and public toilets. See http://103.13.240.111/~fsm/.

EXAMPLE • In Durban, a successful community toilet model that uses repurposed shipping containers and paid site attendants found, using a situational analysis, that households would prefer open urination and defecation if the facility were located beyond 75 meters from their houses.[2] Likewise, based on experience, these community toilets can be expected to work for just three months without an attendant before users abandon them. For this reason, Durban uses South Africa's national allocation for household sanitation to pay for part-time cleaners and attendants at its free community toilets, which are also emerging as safe places for people to socialize. At a cost of about US$65,000 each, Durban has installed over 2,500 community containers that are in continuous operation in over 500 informal settlements, serving over 1 million people, with an 80% acceptance rate among targeted communities. Source: *Neil Macleod, former head of eThekwini Water and Sanitation Department. For additional information, see http://citiscope.org/story/2016/how-durban-set-global-standard-providing-water-and-sanitation-poor.*

EXAMPLE • In various slums in Mumbai and Pune, government-led community toilets were unintentionally constructed in ways that discouraged use by women. In many cases, male and female stalls faced each other; elsewhere, public toilets had entrances that faced directly into the street. Mahila Milan, a coalition between an NGO and the National Federation of Slum Dwellers in India, consulted female self-help groups when an opportunity arose to renovate several of these blocks. By engaging with female users, the coalition identified that minimizing interactions between men and women was a priority, which resulted in a new design to accommodate that need. The process also heard—and responded—to cleaners, who sought latrine doors that swing in both directions to facilitate easier cleaning. Source: FSG Gender and Sanitation Evidence Review, *Draft Report for the Bill & Melinda Gates Foundation, July 2017.*

Notes

1 Note that this is a simplified categorization. Many other stakeholder groups factor into assessments in different levels or ways depending on the context. They can include regulatory bodies; strong formal or informal community or religious groups; local, state, and national authorities; and separate entities that manage sanitation capital expenditure (capex) or operating expenses (opex) budgets.

2 A 2007 study of the Mukuru settlement in Kenya found that women were disincentivized to use community toilets when they were located farther than 15 meters from their houses. See Peal and Evans (2010).

4. SANITATION FROM A USER PERSPECTIVE

Who Uses Shared Toilet Models, and What Do They Need?

Most people rely on more than one individual, shared, community, or public toilet each day, based on their patterns of movement within the city, like commuting to work, working at their place of employment, running errands, and shopping. How often an individual uses a shared toilet model varies based on age, gender, ability, and level of health. Other factors include what times of day a facility is open, walking distance to the facility, and wait time to access it, if there are lines.

For citywide inclusive sanitation (CWIS) to work in practice and not remain a conceptual idea, both deep awareness and appreciation of the full needs of all household members are required. Table D.1 illustrates a day in the life of a typical family in a low-income, urban area, where a community model is the primary residential service. As seen, there is a high likelihood that at least one family member will openly defecate or practice unsafe sanitation at some point during the day. Menstrual hygiene management (MHM) is also needed. Additional tables for the same family under individual household toilets (IHHTs), shared household toilets, and public toilets are provided in appendix D.

When one considers a day in the life for a low-income family with an IHHT, there is a greater sense of security for the family's females, and the grandmother's dignity is strongly supported. Still, in the absence of consistently safe services at the clinic, school, market, and workplace, the alternatives are to openly urinate/defecate or wait until they return home, which are both unreasonable and potentially risky from a health perspective.

If there is no community toilet, household members may attempt to use public toilets as their primary facility. These are likely to be located farther away from home, in nonresidential areas. They are more likely to charge a fee per use, which may be cost prohibitive for household members to use for every sanitation need. Where public toilets and community toilet models dominate, there is also a higher risk that the daughter will be sexually assaulted. Her awareness of this risk is accompanied by persistent fear. This combination of distance, affordability, and safety constraints is more likely to result in additional instances of open defecation and flying toilets. Also, it exposes household members to harmful pathogens from others' feces, and the community and wider environment to the households' behavior, with widespread impact on public health and economic development.[1]

The above scenarios represent one example of experience among a diversity of potential perspectives: IHHTs are not always users' top preference. For example, according to a study, "Two sanitation research projects from southern peri-urban communities [in Ghana] indicate that one third of the population would prefer to have shared

TIP • When thinking of users, consider the context of a whole household and roles different individuals play over time as they relate to sanitation and hygiene. This includes men and women, babies and children, elderly people, and people with disabilities. Many individual users have multiple roles—employees, caretakers, mothers, vendors—and move throughout the city with different needs in different contexts.

Family Sanitation Needs Throughout the Day in a Growing City

How Citywide Inclusive Sanitation Helps Families Thrive

A Day in the Life of the Mijini Family

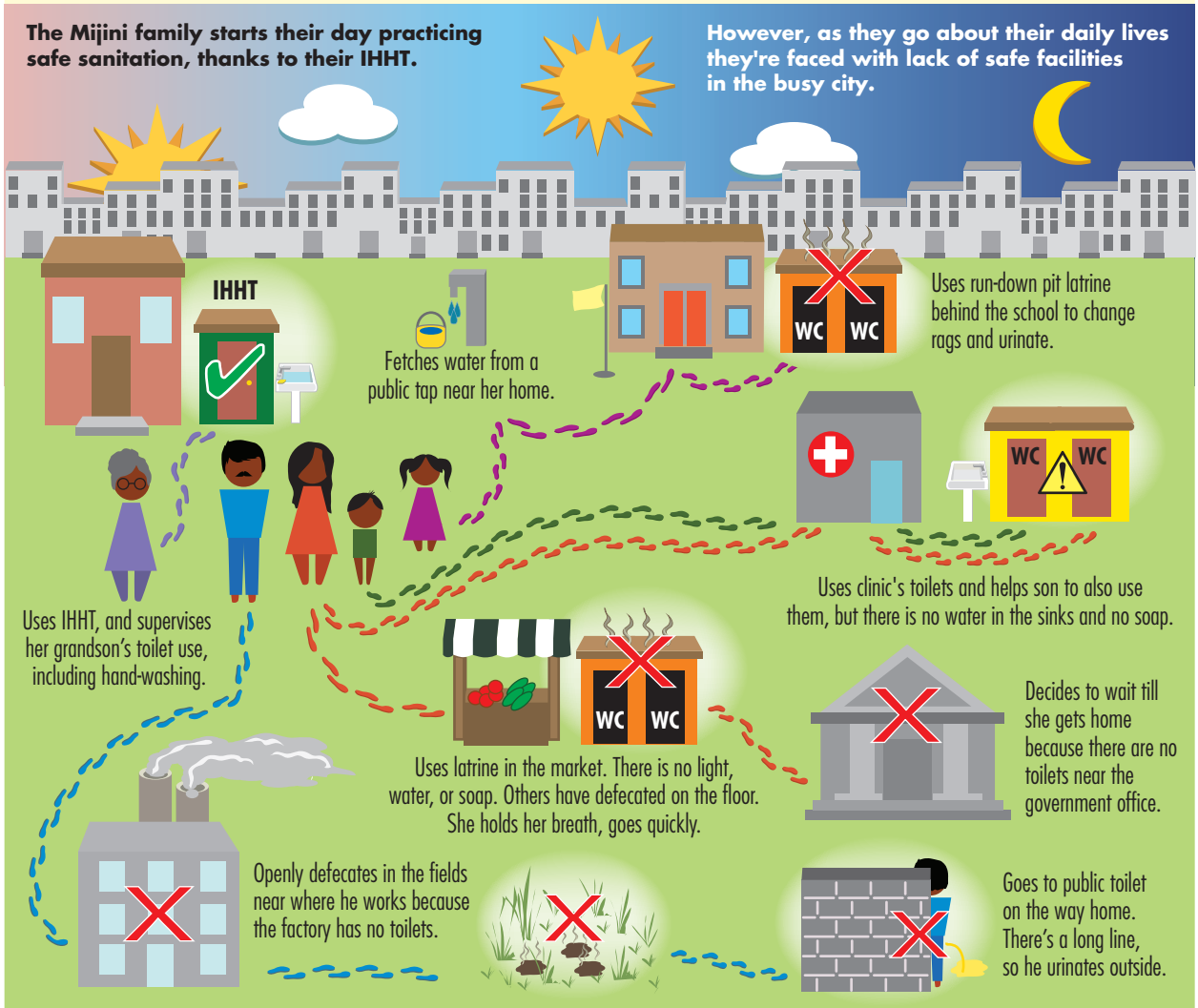
Mother
I am off to the market to sell vegetables, then to the municipal office to pay a bill. After that, I need to get medicine for my son.

Father
I am headed to work in a factory on the other side of the city. Between traffic and a long work day, I will be home after dinner.

Grandmother
I stay close to home, growing vegetables in our side yard, and watching my grandson. I have incontinence, and prefer to stay close to the IHHT.

Daughter
I fetch water in the morning before heading to school. I am 12 years old and recently started menstruating. I am figuring out how to manage because I am committed to my education.

Son
I am 3 years old. Yesterday I played near the drains, and now I have bad diarrhea.



When tackling the challenges of urban sanitation, individual household toilets (IHHTs) are not enough. Most people in a city spend a large portion of their day outside of their homes - going to work, to school, to the market, and many other places. When outside the home, people need to have access to safe, clean facilities where their waste will be properly stored and ultimately treated. In order to achieve Citywide Inclusive Sanitation, options for shared and public sanitation facilities must also be considered, and investments in construction and operation and maintenance of shared facilities must also be prioritized. By doing this, governments can ensure that the Mijini family and millions more have the facilities they need to flourish and stay healthy!

WORLD BANK GROUP

GWSP
GLOBAL WATER SECURITY & SANITATION PARTNERSHIP

TIP • Although in general, IHHTs are preferable to shared household or community models, the extraordinary variety of global situations requires project planners to never assume this preference without engaging the community to understand their preferences and needs and to identify whether there are important exceptions that must be considered. For example, in cases of rentals, extremely low-income residents, and other situations, the costs and logistics required to secure IHHTs may not be feasible or even a priority for individuals. Where landlords cannot be motivated or incentivized to provide IHHTs, identifying alternatives to IHHTs that provide the same basic service and dignity will likely require tackling complex policy challenges.

EXAMPLE • A three-year ethnography study about experiences and perceptions of sanitation across a diverse group of low-income, urban men, women, and children assessed programs led by nongovernmental organizations (NGOs) and community-based organizations (CBOs) across Chittagong and Dhaka (Bangladesh), Nairobi (Kenya), and Hyderabad (India). The study found users frustrated by NGO- and CBO-driven programs that failed beyond the life of project funding. Failure was attributed to a number of reasons, including a requirement of personal investment from users even as they faced insecure tenure and teaching hygiene practices that were not relevant to users' personal and cultural beliefs. Worse off may be the communities where NGOs and CBOs do not enter, even though these areas may be home to the lowest income households and most marginalized communities. The study also found that official planning and NGO planning for sanitation largely ignore issues of citizenship, legality, and land tenure. Source: *Joshi, Fawcett, and Mannan (2011), http://journals.sagepub.com/doi/abs/10.1177/0956247811398602.*

toilets due to issues of land tenure, financial means and bio-physical factors that limit their ability to invest in and construct single household toilets" (Keraita et al. 2013; Spencer 2012; qtd. in Rheinländer et al. 2015, 509).

Urban sanitation programs typically target an individual delivery model, or specific neighborhoods or communities, rather than consider the entirety of the sanitation service chain and how different types of physical infrastructure and sanitation services can meet the needs of users as they move through their days. Investments in utilities often serve to improve services for residential, commercial, and public sector customers who are already connected, rather than extend connections to unserved and underserved areas. As a result, the lowest income and most marginalized communities are persistently excluded from sanitation programming and investment or receive fragmented, temporary solutions. A core principle for CWIS is to ensure that low-income and marginalized communities have access to sanitation where they work, pray, play, learn, and engage with the wider city—in addition to safe sanitation that is as close to home as possible.

How Well Do Sanitation Services Meet Users' Needs?

Overall, many low-income residents without IHHTs do *not* have their basic sanitation needs and wants met by existing shared toilet models. This can be because of the physical design of the facility: a simple oversight, like lacking a ramp in addition to stairs or inadequate lighting at night. It can also be because of the management model: if revenues from advertising in high-traffic areas are prioritized over good customer service and user fees, service delivery will suffer.[2] If a service authority is not held accountable or does not hold service providers accountable, services are unlikely to be safe, adequate, or convenient from a user or public health perspective.

EXAMPLE • The city of Warangal, India, sought to understand the role of gender in public toilet design and use. City officials reviewed use of the growing number of public toilets in the city. The review found that women tended not to use facilities for the following reasons:

- About 63% of women expressed a preference for female-only toilets, with a separate entrance for women, and 72% expressed a preference for a female caretaker.
- Distance from home to the toilet was an important parameter in planning the locations of new toilets: 5 minutes was determined the most appropriate distance in terms of time to access.
- Unclean surroundings, unhygienic facilities, lack of privacy, crowding of men around the toilet, and behavior of the caretaker deterred women from using the city's public toilets.

The city sought to address these concerns. They renegotiated contracts with existing service providers to ensure separate entrances for women at all new public toilets being built. The city then set up a number of public toilets designated as female only. This course correction was relatively simple and low cost but would not have been possible without action-oriented monitoring of gender-disaggregated service levels and user experiences. Source: *Interview with Professor V. Srivinas Chary, Administrative Staff College of India.*

Because most shared toilet models are planned and funded on a project basis by governments and donors, the priority is to install a physical structure, whereas the delivery model may be based on false assumptions of use, willingness and ability to pay, and level of effort to maintain the facility. If the quality of service is below what users are willing to tolerate, the service and the asset fall into decline, and eventually one finds an abandoned toilet block that nobody uses for sanitation purposes.

How Can User Needs Be Addressed?

A telling indicator of whether users' needs are being met is the extent to which users are involved in the various stages of initiating, executing, and managing a shared toilet model over time. Although the literature offers some consistency about what users want, there is variability in different communities. The best way to find out about whether needs are being met is to ask directly. Also, the feedback loop works both ways. Ongoing engagement and dialogue should contribute to a culture of responsiveness between users and service providers to meet each other's changing needs over time. Service providers must be cognizant that there are many types of users—for example, people with disabilities, the elderly, and women—and the special needs of these groups should be considered. Users should also have a mechanism to report examples of poor service to a service authority or a similar entity that will respond quickly if the toilet is not clean, if the wait times are too long, or if the contents of a septic tank are backwashing into a community. This basic function of mutual accountability is often missing in shared toilet models (and across the sanitation service chain) and results in mutual disempowerment and lack of trust. This further breaks down services because users will not—nor should they be expected to—pay for services that do not work or offer value.

When feedback loops are effective, their effect on the design and management of shared toilet models can be very positive. Service authorities can work with users to monitor basic service levels and allow service providers to creatively meet expectations in ways that work for their business as well as the community.

A decision tree relating to toilet users and demand is provided in figure 4.1.

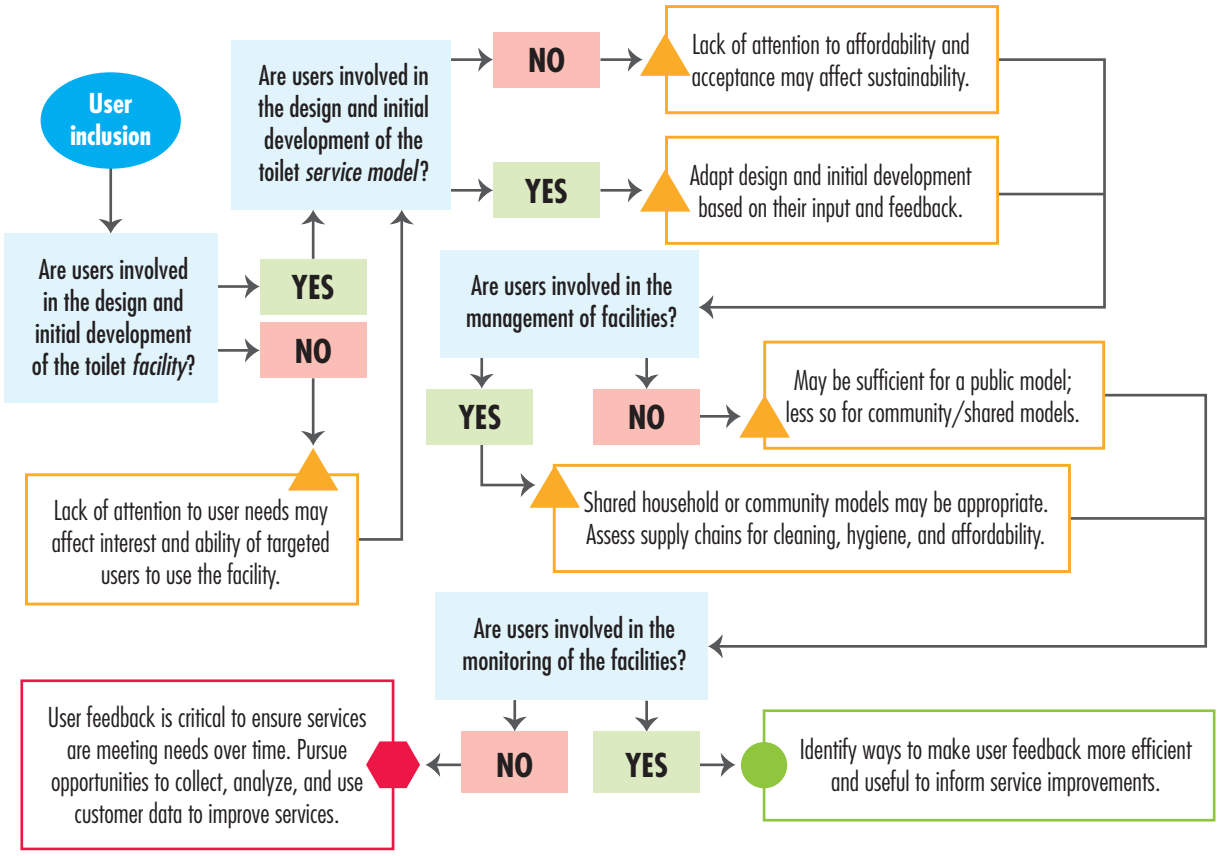


Figure 4.1 • Decisions and Alternatives for User Inclusion in Shared Toilet Models

EXAMPLE • In Rajastan, a government of India–sponsored project sought to empower women by building household toilets to increase safety and privacy while meeting sanitation needs (O'Reilly 2010). Women had been holding their urine during the daytime and then walking to community latrines in the dark. Initially, women did not participate in site selection decisions for the new IHHTs. Ultimately, most latrines were built in family courtyards, a location in the home that was reserved for men and guests, thus excluding women from using them. The project ultimately adjusted to include women and men in site selection, and facilities were placed in a more private part of the household so that women could access them and have dignity in their use. Source: FSG Gender and Sanitation Evidence Review, *Draft Report for the Bill & Melinda Gates Foundation, July 2017.*

EXAMPLE • In Durban, South Africa, a design goal for new community toilets was to attract residents to use the toilets regularly. Through talking with users, one unexpected demand that became apparent was comfort: users want to read and relax in the toilets as a space away from home and work. As a result, toilet block attendants are permitted to set up games and music near the toilets, which creates opportunities for additional revenue streams while offering users opportunities to read, relax, and socialize. Source: *Interview with Neil Macleod, former head of eThekwini Water and Sanitation Department.*

EXAMPLE • The design goal for Samagra community toilets in Pune, India, was to reduce vandalism and increase safety and maintenance at scores of dysfunctional community toilet blocks. Samagra redesigned existing blocks with bigger windows, better ventilation, and better cleaning tools. The company also engaged community members—especially children—with complementary education about good user practices to increase and improve use and reduce open defecation. Attendants are trained, provided health care, and allowed to vend items on the side for additional income and to improve their stake in maintaining quality services. The company also vends advertising space, health insurance, bill pay options, and other services to supplement low revenues, keeping user fees affordable. Source: *Interview with Swapnil Chaturvedi, Samagra CEO.*

EXAMPLE • In Addis Ababa, Ethiopia, initial public toilet designs for a public investment program included stairs to access facilities. After one of the female operators, who has a disability, mentioned that she was unable to use the facility due to the lack of a ramp, the design was updated such that all new facilities now include ramps. Further engagement with the operators and local community led to adding additional services—water for washing, small seating areas, and more—at each new public toilet site. Source: *Interview with Yitbarek Tessema, Lead Water Supply and Sanitation Specialist at the World Bank.*

RESOURCE • The Business Model Canvas is a useful tool that offers a constructive method for thinking through different types of customers of a service, what they are looking for in a service, and how that service can be provided to them. This strategic "canvas" is intended to allow for rapid sketching and iteration, and includes questions about costs and revenues, which can help in thinking through whether a service will be sustainable over time. The tool design draws from the experiences of thousands of experts with business, strategy, and innovation backgrounds. Over the last 10 years, an ecosystem around the business model canvas (https://strategyzer.com/canvas/business-model-canvas) has emerged, including many free online resources and facilitation methods.

Notes

1 The Sanipath website offers information about and a tool to assess public health risk as it relates to sanitation, with a goal to help inform investment planning processes. See https://sanipath.org.

2 See, for example, experiences in Delhi, India, as described in World Bank (2007).

5. SANITATION FROM THE PERSPECTIVE OF SERVICE PROVIDERS

What Are Sanitation Service Providers?

In the context of shared toilet models, service providers offer diverse services depending on the model and the market, from an individual caretaker under contract with a service authority to manage and clean a facility to a private company that builds and manages a full fecal sludge management (FSM) service chain for community and shared household toilet facilities. Their relationships to different users will also vary greatly from setting to setting.

What Does a Sanitation Service Provider Do?

Generally, a sanitation service provider ensures that a toilet facility is stocked with supplies, provides cleaning services, and ideally, manages the flow of users entering and exiting the facility—particularly during peak times. The provider typically collects and manages revenues; it may also provide back-end bookkeeping and accounting for the toilet facility or a cluster of facilities. Sometimes, the sanitation service can be seen as a base for generating other revenue streams.

In practice, the boundary of responsibility for a provider varies by context, and ideally, by contract. A provider may have a service contract to manage operations and maintenance for several facilities, including sludge emptying and major repairs for a multiyear period. Or, the role may be limited to a service level operating agreement for basic cleaning and light maintenance. Build-operate-transfer (BOT) contracts and design-build-operate (DBO) contracts have been used in some areas; all contracting structures can focus on a single facility or extend to multiple sites or even zones within a city. Despite the diversity of models and independent of scope, providers are likely to benefit from orientation and training to ensure they are aware of and capable of delivering defined activities and outcomes. Ensuring a common and clear understanding of expectations among parties is a critical starting point.

Who Are a Service Provider's Clients?

Providers may be contracted to provide a defined set of services by a landlord owning residential or commercial property (or properties); a public agency or service authority, such as a utility company or municipal government; or a public or private enterprise, such as a hospital or bus company. They may act independently in an unregulated or under-regulated marketplace and work directly with users as their primary paying clients. In most cases, they are providing services to multiple clients. Hence, although the primary objective for a service provider should be to extend basic services, including menstrual hygiene management (MHM), to unserved

EXAMPLE • For many years, community toilet operators in Accra, Ghana, were notorious for being responsive only to political interests that provided lucrative operator rights to community toilets and their associated user fees. Toilets were filthy, but users—generally low-income renters in densely populated communities with high water tables—did not have the resources or conditions for alternatives. Increasing national and international pressure to improve conditions led to increased but incomplete enforcement of landlord-provided shared toilets and resources for IHHTs. Still, poorly operated and maintained community toilets persist as the only option for many low-income users.

TIP • A provider that is reliant on multiple categories of clients for financial viability may have more direct accountability to provide quality services and ensure that public health and safety goals are being met. Good services may be necessary to secure revenue streams from users, from service authority contracts, and from complementary vendors (for example, advertising partners who may expect a steady stream of potential customers passing by their message and want to be associated with a positive, clean space). Diversifying revenue streams can, however, also weaken the toilet's core business model. Where revenues are highly fragmented and payers' accountability is low, service providers' viability may weaken, for example, from time spent chasing late government reimbursements, fighting turned off water supplies, and trying to collect tiny fees from users who expect free services. Without a strong, primary revenue stream that covers costs (acting as an 'anchor'), providers may attempt to start multiple lines of business, many of which will likely fail. In practice, diversifying (or stacking) revenue streams tends to work in public toilets, where revenues from user fees can be higher. It can also work in one-off cases where creative local entrepreneurs are able to keep their overhead low. However, cases of a business scaling this model in a financially viable manner—particularly for community toilets—were not identified. Private service providers have an advantage, contractually or de facto, if their services can be adjusted or even stopped when payers miss or delay payments or if payers fail to follow through on other in-kind commitments that affect business viability and service quality.

Enabling conditions for service provider success

- Capable, trained, and incentivized/motivated operators (public, private, or community based), supported by service authorities through payments, public education, FSM services, and other needs
- Proper use of technology/IT services for mobile measurement, monitoring, and payment services, potentially including cashless payment options
- Secure operating environment with support of local vested interests, including local government
- Reliable and diversified revenue streams to support operating model and preferably some contribution to capital maintenance or expansion
- Clear accountability and enforcement mechanisms among users, service providers, and service authorities
- Appropriate design and quality construction of toilet blocks, supported by effective maintenance systems
- Clear land tenure or supportive land use policy where land tenure is not clear; must allow for a fixed or mobile toilet, including drain field

and underserved populations, a service provider's clients may not be the users themselves.

How Are Service Providers Compensated and Held Accountable?

At a minimum, service providers for shared toilet models may be engaged and compensated in a hired or salaried arrangement or provided in-kind benefits like housing. In these lighter contractual arrangements, service authorities retain significant responsibility for ensuring the assets are well maintained and serviced beyond day-to-day cleaning and maintenance. Practically speaking, they do not consistently act on that responsibility. Service providers may also be engaged under a contractual agreement that provides regular payments from the service authority, or preferential operating rights in a given area, in exchange for an agreed-on level and quali-

ty of service provision. More successful community and public toilet models emerge when service authorities are willing to enforce contracts and cancel them when the terms aren't being met.

With respect to compensation, a single provider may need to collect revenues or in-kind contributions from many clients or customers to ensure a viable business. These may include user fees, advertising fees, sales of other utility services like water and electricity, desludging of septic tanks, and connecting shared toilet models and households to sewer networks, where this is possible. It may also include subsidies and maintenance reimbursements from a service authority. A successful management model may also use the toilet facility as an anchor for other revenue-generating schemes, such as small shops, water sales, mobile phone charging, and community meeting spaces. Service providers may operate multiple sites in an area, or across a city, and hire staff for individual locations. By operating multiple sites across the city, the service providers may also be able to recover costs from some of the less profitable locations (for example, those that are located in areas with low foot traffic or areas where the fees for emptying or wastewater tariffs are higher).

What Factors Go into Designing a Contract for a Shared Toilet Model?

Setting up effective arrangements with service providers depends, to some degree, on the type of facility and type of model that is intended to deliver services. These are not static. A shared household toilet may look very similar to an individual household toilet (IHHT), just with more people using it and a delivery model that includes cleaning. A community model may be constructed as a community asset, with bathing facilities, laundry, and space for social activities and require a more complex management contract that includes social outreach as well as operations. A public toilet may be designed for quick visits (primarily urination), with a straightforward management contract. However, experience also suggests that the same physical asset can provide sanitation with different delivery models. Consider a toilet block with 10 toilet seats, separate entrances, and an equal number—five each—of latrines for men and women as a starting point. Figure 5.1 offers an example of how the same basic physical structure can be overlaid with shared household, community, and public models, and in some cases, multiple models operating together as a hybrid.

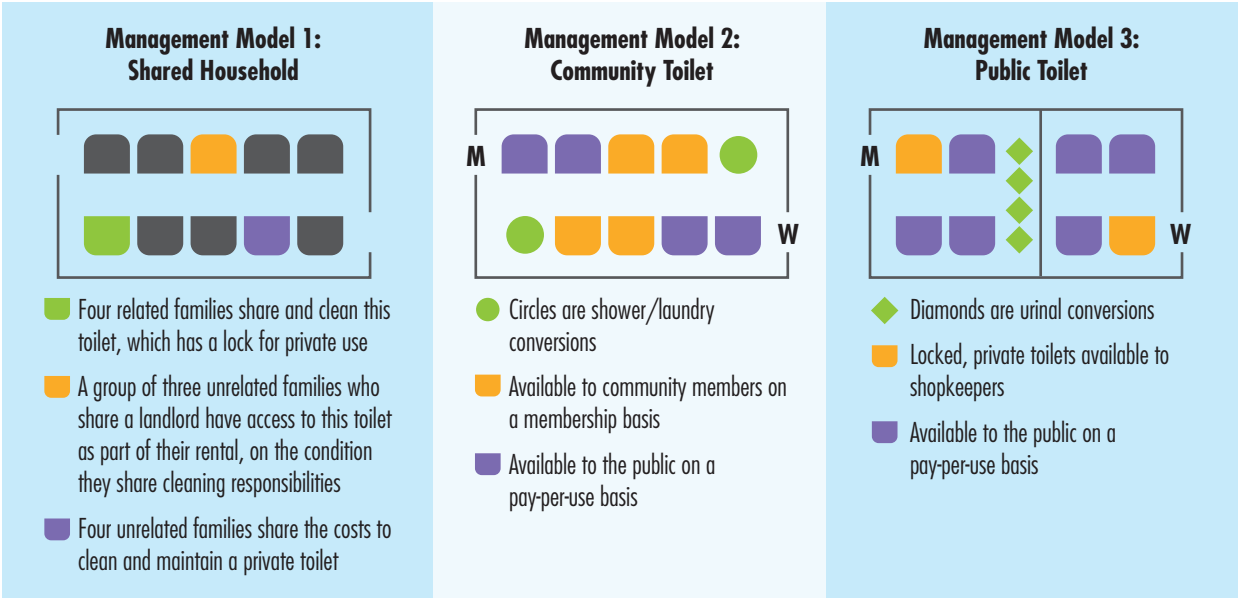


Figure 5.1 • Possibilities: How Different Management Models Can Be Applied to a Similar Physical Asset

Regardless of the specific model or approach taken, in most contexts some amount of iterative learning must take place because the needs and preferences of users are different—even within different parts of the same city. Consequently, it is important to plan for sufficient time for getting these models to scale.

When Are Different Models Appropriate?

Different situations call for different shared toilet models. An experimental mindset is needed to cultivate models that can endure over time within the context of citywide inclusive sanitation (CWIS), as part of a portfolio of service models to achieve the Sustainable Development Goals (SDGs).

Table 5.1 outlines some of the variety among shared household, community, and public toilet models. Decisions on which shared toilet models are most appropriate for different locations should be informed by insights gained through the situation analysis, as described in "Understanding the Sanitation Market."

For a basic market analysis, a variety of investment and revenue collection models can be considered. Ideally, a city will use the situation assessment to develop investment plans that do the following:

- Design and apply criteria for where, geographically, investments are required
- Articulate minimum service levels for new investments
- Estimate the cost of investments for new facilities as well as for rehabilitation of existing assets
- Define potential financing models to attract funding to meet cost requirements
- Define, at a high level, service delivery models to be used (for example, whether municipally managed, community managed, or privately managed or whether a hybrid approach is preferable)

In the early phase of implementation, experimenting with alternative operating and revenue models can help better understand the needs of the population and how these needs can be met with an enduring management model. Notably, all models should be expected to require some level of support from public, private, and nongovernmental organization (NGO)/community-based organization (CBO) sectors in different capacities and at different times. For this reason, the service authority must also be flexible to support models evolving to meet a community's or neighborhood's changing needs.

A closer look at shared household sanitation models

In some places where land tenure and housing markets are fairly stable, long-term residents of neighborhoods and housing compounds may be interested in investing in shared toilets, particularly when there is a subsidy to help offset capital costs of construction. In low-income and informal areas, a shared household sanitation model will depend on convincing landlords—who may be absent, unavailable, and disinterested—to convert either land, or one of their units, for a toilet and possibly for

TIP • Articulating a business case for investment in and provision of shared toilet models is a considerable challenge for numerous reasons, including the perennial challenges of pricing and revenue, where prices are too high for users and are often too low to cover operational costs, let alone maintenance or rehabilitation. For the most part, charging low-income and slum areas for the full cost of investment and services is impossible. Subsidies or cross-subsidies are necessary and could include in-kind contributions or tax exemptions. Creativity and experimentation are needed to identify a business case that blends public and private investment in the absence of financially profitable service models.

	Shared Household	Community	Public
Asset ownership	· Landlords · Residents (if they are home owners/ landowners)	· Government/local public sector · Nongovernmental organization (NGO)/ community-based organization (CBO)	· Government/local public sector · Private company
Management model	· Cooperative financial investment: users pool resources to pay for maintenance (minor maintenance to emptying) · Landlord maintains and manages regular and larger maintenance, charging fees to offset cost	· NGO or CBO led, with regular community/ user committee engagement · Private sector led, governed by a service authority or utility · Local government operated · Privately managed through a cross-subsidy from profitable public toilets (for example, as a stipulation of contract with service authority)	· Private sector led, governed by a contract with service authority or utility · NGO/CBO led, governed by a contract with service authority or utility · Private sector owned and operated independent from service authority
Operating model	· Cooperative time investment: resident users clean and maintain according to schedule they create and manage	· Caretaker (part-time or full-time), paid for maintenance or in exchange for housing at facility	· Caretaker (part-time or full-time), paid for maintenance or in exchange for housing at facility
Revenue model	· Landlord can charge higher rents and increase stability of renters · Households share costs	· Transfers: from government budgets or donors · Cross-subsides: for example, through a privately managed public toilet concession · Fee for service: multiple models (for example, membership, pay-per-use, payment models) · Value-added services: laundry, shower, meeting room, biogas generation, other utilities (water/electricity), kiosk, entertainment	· Fee for service: pay-per-use, payment models · Value-added services: biogas generation, other utilities (water/electricity), kiosk, entertainment
Financial model	· Microcredit for initial capital costs of construction · Public subsidies for household-level toilets · Households pay for cost directly	· Capital expenditures (capex): grants and loans for capital costs; land donated or subsidized by public agencies · Operating expenses (opex): covered partially or wholly from user fees, possibly offset by grant or public funds (for example, utility costs)	· Capex: grants and loans for capital costs; land or infrastructure donated or subsidized by public agencies · Opex: covered from user fees
Accountability model	· Increases with fewer participating families per toilet; tighter preexisting social bonds · Locks/security to ensure privacy and exclusivity to users	· Feedback mechanism for users to report on operators' performance · Regular engagement between operators and users to adapt to user needs	· Feedback mechanism for users to report on toilet condition · Regular performance review by service authority

Table 5.1 • Landscape of Business Model Options along the Shared-Community-Public Toilet Continuum

EXAMPLE • In 2007, in Mukuru, a settlement in Nairobi, Practical Action (PA) initiated a program to expand water and sanitation services to the area. The average house size was small—measuring 3-by-3 meters for five people—and was part of a block of six, eight, or 10 single rooms on a plot of land with shared walls. These plots were owned, mainly, by absentee landlords who rented either individual rooms or the full house. At baseline, 11 percent of families had access to an IHHT, whereas 16 percent shared a toilet with their neighbors. The rest claimed to use a community toilet, but in practice, open defecation was rampant.

As part of a wider program to strengthen relationships between the utility (service provider) and the community, PA developed a new shared household toilet model, which they called a stand-alone toilet (SAT). The idea was to convert one of the 3-by-3 rooms of a house into a shared toilet facility, with a toilet and a handwashing basin outside. These were built with local labor, overseen by the Clerk of Works, who also helped in siting the toilets to access the sewer main, which was extended as part of the partnership with the utility. Because space was so limited, a few landlords were financially supported to convert one of their house plots into an SAT. The idea took off, with evidence of replication by landlords, because they often stood to earn more by charging households to use the SAT than they would as a rental only. Source: *Peal and Evans (2010)*.

EXAMPLE • CEPT University has outlined a proposition to leverage the individual household subsidy, offered through India's Swachh Bharat Mission, which aims to end open defecation in India. Working with local municipal partners over an 18-month period, CEPT modeled existing sanitation scenarios for three cities in Maharashtra: Wai, a tourist town; Ambejogai, a tourist and educational town; and Sinnar, an industrial hub. In all three cities, a majority of citizens had IHHTs. However, the number of families practicing open defecation ranged from 2 percent in Wai to 40 percent in Ambejogai, and the percentage of the population dependent on community latrines was 30 percent in Wai, 24 percent in Sinnar, and 4 percent in Ambejogai.

In Wai and Sinnar, where community toilets are more prevalent, the research identified that most of the blocks lacked basic infrastructure, with defunct septic tanks and no handwashing facilities. The research also found that local governments were spending considerable funds on maintenance for the facilities. Based on these findings, Wai and Sinnar expressed interest in pursuing a shared toilet model, with no more than four households sharing and agreeing to maintain it over time. Overall, residents were supportive of the idea and expressed a willingness to pay between 13 percent and 20 percent of the installation cost. Wai signed a resolution to implement a scheme to promote individual and shared household toilets, thinking that nationally provided subsidies of 5,000 Rs per family could be applied to shared or household toilets, which were priced at 30,000 Rs per toilet.

Unfortunately, despite interest from local government and households, the concept remains an idea due to a national policy barrier: the 5,000 Rs subsidy is strictly defined for individual, and not shared, household toilets. The policy requires families receiving subsidies to upload photos of their new toilets, which are geotagged for verification ("One family: one toilet"). This highlights how policies and regulations can fail to accommodate innovation in shared toilet models. Source: *Interview with Meera Mehta and Dinesh Mehta, CEPT University.*

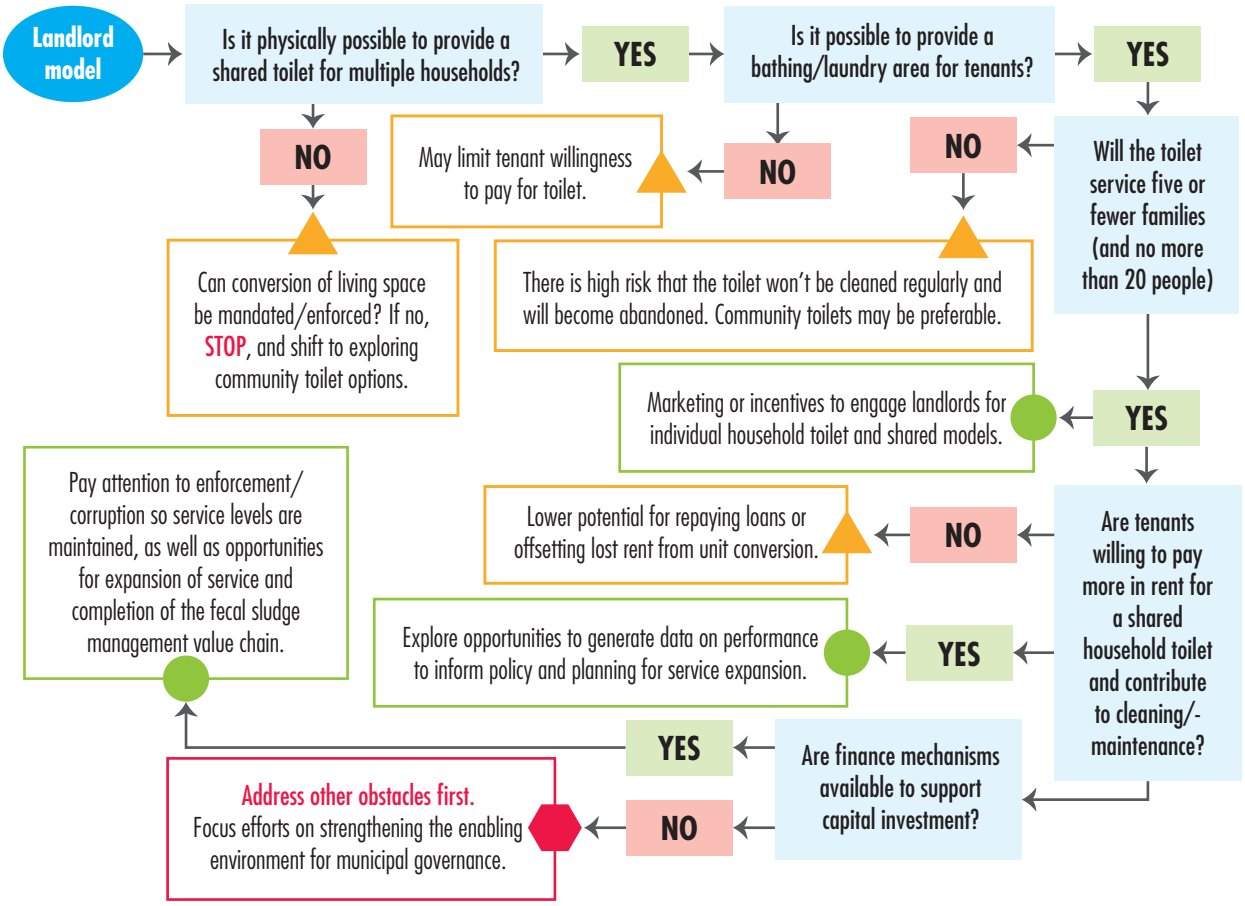


Figure 5.2 • Decisions and Alternatives for Shared Household Toilet Models

showering and laundry facilities. The incentive will likely need to be economic.

Assuming a landlord is interested in considering building shared household sanitation, figure 5.2 provides some initial prompting questions and considerations to inform decision making.

A closer look at community toilet models

At their best, community toilet models offer users a clean, safe, and secure toilet; located within a reasonable distance from homes; and with minimal wait times because the pool of users is limited and can be accommodated by the number of seats the facility offers. Community toilets are often promoted as alternatives to open defecation or shared toilets when shared household or IHHTs are not possible. Local governments may invest in these facilities to advance a political agenda before an election, hoping that a third-party provider—often an intermediary NGO/CBO—will deliver sanitation services in areas beyond the sewer network, at little or no cost to the city. For NGO/CBOs, sanitation is often perceived as paramount to economic and social development in low-income areas. Although on paper this may seem like a positive dynamic, in practice, community toilet models typically struggle to provide high-quality services, and they lack a financial model for replication.

In practice, NGOs/CBOs tend to manage community toilets. Their organizations' employees are not neces-

EXAMPLE • In Pune, India, wards across the city invested in hundreds of community toilet blocks over many decades. Invariably, the facilities fell into disrepair because of lack of maintenance, leaving residents to use unsafe facilities or resort to open defecation. Periodically, the blocks were refurbished at great public expense, only to repeat the cycle. In this context, the city's mandate to provide sanitation was clear, and budget was available. However, there weren't any accountability mechanisms to ensure safe services were being delivered. In response, a social enterprise startup, Samagra, negotiated with the city for exclusive management rights to the blocks, in exchange for a one-time refurbishment investment and utility cost payment. The company renovates each block based on human-centered design to improve the user and caretaker experience while limiting opportunities for theft and vandalism (for example, of faucets and other facility parts). Facility management teams have been professionalized and incentivized to ensure facilities stay clean, and the company layers in multiple complementary sources of revenue to meet its cost and profit margins, given that user fees are otherwise too low, and unreliable, to cover costs. This is an example of a win, where public expenditure and private sector profit complement each other to result in better, more affordable services for community members at a lower long-term cost to the city.

sarily trained to manage toilets technically or from a business perspective, so training and capacity building are required. These organizations' ability to scale operations is also limited. Private companies can also be direct service providers for community toilets, providing caretakers for individual facilities, as well as back-end administrative and logistics support for things like customer feedback or integrating digital finance as a payment model.

Community toilet models can be a useful and necessary alternative in residential areas, with a variety of possible pricing structures, from club membership models that allow for unlimited use by households on a fee per-week or per-month basis to differentiated pricing structures that serve a wider pool of potential users. Even so, experience suggests that community toilets typically fail over time, while successful cases are limited in their scale of operations. Community toilet models are difficult to establish and manage. Target users tend to be either unwilling or unable to pay fees to cover operating costs. Quality professionals of any category are difficult to engage given the host of complexities and challenges and the promise of relatively low or even negative margins.

Many low-income communities around the world also have vested interests and are part of political structures that can undermine efforts to improve community services at all aspects of the sanitation service chain. They include pit emptying mafias, local control of budgeting allocations to serve some areas over others, and takeover of shared toilets to exclude use by targeted groups. These

Types of costs associated with shared toilet models

- Planning and development costs
  - Situation assessment
  - Initial design and development
- Capital expenditures:
  - Cost of land (if purchased)
  - Building materials
  - Urinals/toilets/pans
  - Construction costs
  - Septic tank or sewer connection
  - Connection to power/water/telecom
- Operating expenditures:
  - Electricity/water/solid waste/other utility bills
  - Labor (cleaners, administrative, other staff)
  - Bookkeeping/accounting
  - Security
  - Maintenance/repairs
  - Community/customer engagement

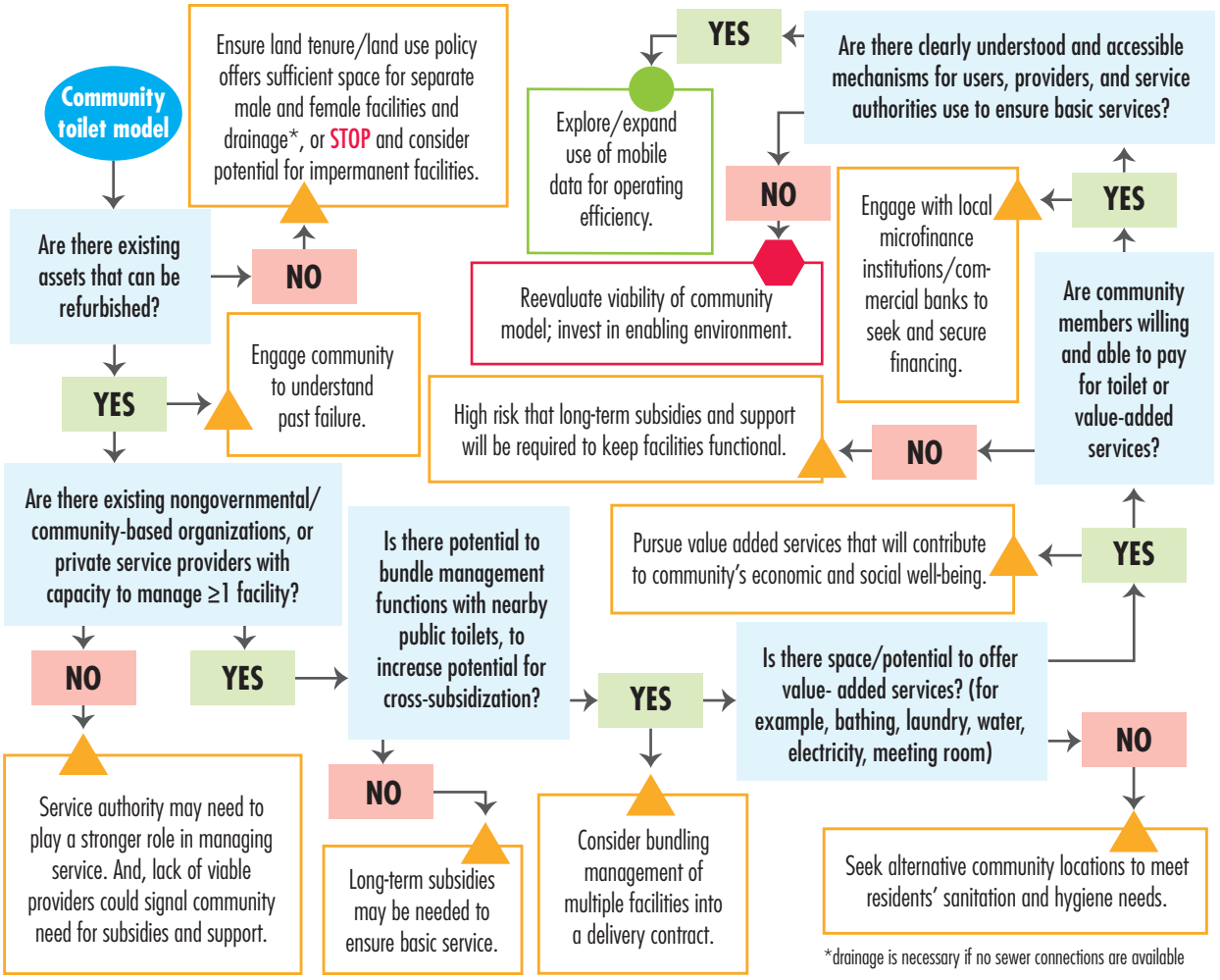


Figure 5.3 • Decisions and Alternatives for Community Toilet Models

interests must be clearly understood and often engaged directly to help prevent service disruptions and irregularities. Vested local interests can also create safety risks for service providers and users by creating political challenges or financial risk by taking over assets once a pattern of user payments has been established.

Sometimes these same stakeholders can be resources, improving safety, facilitating community engagement, and leveraging relationships with other local leaders. Cases in which these dynamics have been successfully managed generally required substantial community engagement, time, and resources to understand dynamics, to engage target users, and to establish adequate trust. This requires a significant up-front cost, which is often left out of project-based planning budgets and timelines. For service providers, maintaining good relationships with community interests is worth assuming as a recurring investment requirement.

Figure 5.3 provides initial prompting questions and considerations to inform decision making around the design and implementation of community toilet models.

A closer look at public toilet models

Public toilet models are the least preferable for serving users in their residential communities. They are typically

designed for use in public places and tend to be found in areas with high pedestrian traffic, serving users with diverse income levels. The management model tends to prioritize quick urination by people who are in transit from one place to another. To date, such facilities are typically designed for a predominantly male customer base. Clear mandates and incentives need to be in place to ensure services are provided for a variety of users: women, children, elderly people, and people with disabilities, among others. To be inclusive, facilities should address all users' concerns about safety, cleanliness, privacy, as well as design.

A fee-for-service revenue model is a common structure, and as a result, public toilets tend to be more financially viable than other shared toilet models. However, because government oversight and competition tend to be limited, public toilet service providers are not naturally incentivized to maintain high service levels for their customers. Because public toilets are perceived to generate more income than community or shared household models, they are often seen as opportunities for cross-subsidy to support less crowded toilets in residential areas. In practice, the business case for such a cross-subsidy has not been demonstrated, without additional public or donor subsidies.

Figure 5.4 provides some initial prompting questions and considerations to inform decision making concerning the design and implementation of public toilet models.

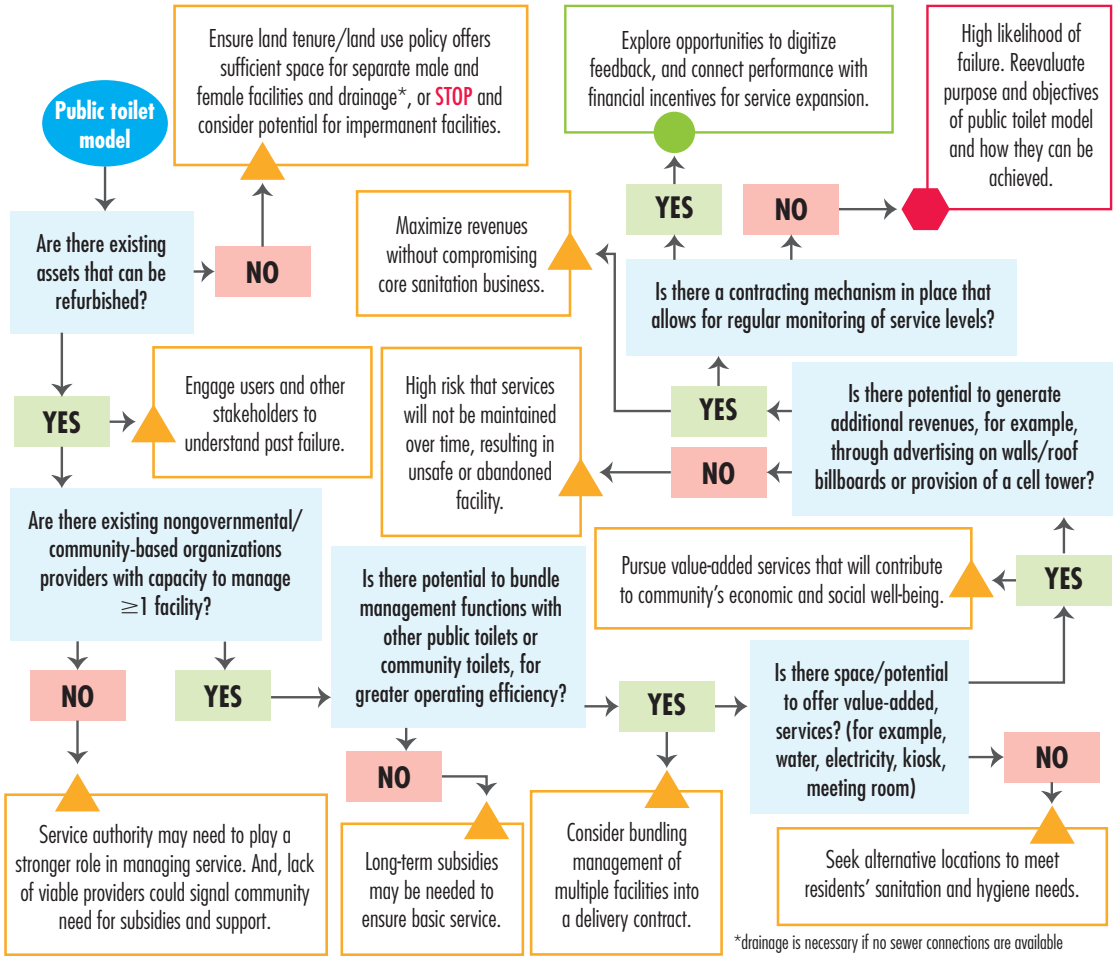


Figure 5.4 • Decisions and Alternatives for Public Toilet Models

RESOURCE • Human-centered design is a method pioneered by IDEO, a San Francisco–based design firm behind iconic products including the mouse (for computers) and the air pump. According to IDEO's (n.d.) website, "Human-centered design is all about building a deep empathy with the people you're designing for; generating tons of ideas; building a bunch of prototypes; sharing what you've made with the people you're designing for; and eventually putting your innovative new solution out in the world."

For more information, see http://www.designkit.org/human-centered-design. For more information and a case study about the Clean Team in Ghana and how they incorporated human-centered design into sanitation service delivery, see http://www.designkit.org/case-studies/1.

RESOURCE • GIZ (2016) has developed an informative assessment of public and community toilet models focused on India but with wider relevance. The assessment includes why public and community toilets are important and several shortcomings and success factors in their design, implementation, and ongoing management. Success factors include data-driven decision making in demand and supply assessment, a shift from installing assets to cultivating services in implementation, and focusing on accountability, adequate monitoring, and financially viable business models. Shortcomings include failure to incorporate user preference during the design phase, incorrect selection of construction material, unsuitable design in the planning process, absence of monitoring and enforcement mechanisms, and insufficient funds to cultivate financial viability.

6. SANITATION FROM A SERVICE AUTHORITY PERSPECTIVE

What Are Service Authorities, and What Is Their Purpose?

Service authorities are entities responsible for ensuring sanitation services are delivered to a defined population or within a geographic area on an ongoing basis. Responsibility for ensuring service delivery should be accompanied by adequate resources to deliver those services and a system of accountability for meeting mandated performance targets. Service authorities tend to be a public sector municipality, county agency, or utility provider. They may delegate the work of actual service delivery to one or more service providers from the private sector, a department or multiple departments within the authority, or otherwise. Regardless of how actual services are provided, the service authority holds the ultimate accountability for user needs being met.

What Do Service Authorities Do?

Service authorities should, but do not always, have a clear legal mandate to deliver clearly defined sanitation services. Ideally that mandate is consolidated under a single agency. The legal mandate and corresponding policy guidance should include high-level parameters for the minimum service level required (for example, accessible, safe, inclusive, and appropriate for the needs of all users, including special needs of women, children, and people with disabilities). The mandate or policy should address any special inclusions and how those are to be handled. Ideally, these policies clarify subsidies and financial flows and ensure disbursement so that the scope of policy ambition can be achieved. For example, a utility company may be required to provide services to all residents in its service area. If this includes informal and fragile settlements, the utility provider may get a corresponding budget allocation tied to reaching those communities. Sometimes, this budget is channeled through a stand-alone pro-poor division in the utility provider, which may serve either an advisory or operational function. Alternatively, pro-poor activities are mainstreamed throughout the utility provider's operations. Research into the effectiveness of pro-poor divisions suggests that they are effective when they play different roles over time to meet prescribed needs. For example, if the utility company is just starting to assume

Key elements of an effective service authority

- Clear legal mandate to ensure inclusive and safe citywide sanitation—agnostic of technology—that specifies:
  - What service levels must be guaranteed
  - Service area boundaries, including areas of greatest need within and around a city
  - Emphasis on ensuring appropriate services for women, girls, people with disabilities, and other subpopulations
- A reliable, ring-fenced budget that maps to a reasonable estimate of the costs of ensuring sustainable, and inclusive, service provision
- Accountability to some third party for performance (for example, state government, regulator), inclusive of transparent monitoring and mechanisms for public engagement
- Pro-poor division that is trained, structured, and incentivized to ensure services reach and engage the most vulnerable and marginalized user segments

TIP • If multiple authorities are responsible for different components of sanitation service delivery, a coordinating committee or working group should be established, and a plan should be elaborated and jointly managed to coordinate assessments, monitoring efforts, investment planning, and other activities. It may be worthwhile to hire a dedicated coordinator/facilitator to cultivate collaboration across relevant stakeholders.

EXAMPLE • In Maputo, Mozambique, there are two layers of local decision making, with district and ward officials, some of whom are political appointees and others who are administrative officials. Because responsibility for household sanitation in non-sewered areas is not clearly defined, decision making and accountability are often blurred. Complicating this reality is that political officials are elected to represent the whole city, which often means that low-income and marginalized areas are neglected by the political apparatus. It is important to understand how local decisions are made as part of adopting citywide inclusive sanitation (CWIS): low-income areas with the greatest need for sanitation are often excluded physically from formal utilities; socially, from political systems; and financially, from the budget process. Source*: Interview with Tanvi Nagpal, School of Advanced International Studies.*

responsibility for service delivery in unserved areas, a pro-poor division can act as a champion and catalyst for better services. If the utility is providing services in underserved areas, a pro-poor office can act as a focal point for mainstreaming what works to upgrade and improve services. For some utilities, pro-poor units may be time bound. Others have a permanent division to meet changing needs of low-income areas over time (Peal and Drabble 2015; see also World Bank 2009).

In some cases, responsibility for sanitation services is divided across multiple authorities. Services related to conventional sewerage systems, on-site fecal sludge management (FSM), provision of public and community toilets, and managing effluent in storm drains can all fall to different entities. Likewise, when administrative boundaries of a city may not correspond to population density and need, service provision mandates may fall to both city and county authorities.

When utilities are mandated by service authorities to provide conventional, sewer-based sanitation, they tend to prioritize sewer networks in the urban core. Even if there are plans to extend networks to technically difficult and expensive-to-reach communities, actual investment and execution are slow and insufficient to meet demand. In these cases, serving marginalized communities with non-sewered options often falls to another entity or is left up to individual households. This results in higher costs for non-sewered households, who are often lower income than those with access to the network. Where land is scarce and population density is high, possibilities for new individual household toilets (IHHTs) or shared sanitation are limited.

How Do Service Authorities Function, and How Are They Accountable for Services?

A service authority must have budget that is reliable, and ideally, has a somewhat diversified set of funding sources (for example, revenues, central or state transfers, local tax base). The budget should reflect the approximate public costs of ensuring CWIS on a sustainable basis. The authority should be allowed significant flexibility to source private investment and use rules, regulations, and incentives to ensure services are being delivered cost-effectively. It is generally not reasonable to expect a sanitation service authority to be financially independent: public finance, and often donor finance, is needed.

Further, where a service authority relies on shared toilet models to meet its service delivery mandate, implementation generally will depend on some portion of costs being covered by central or state funds or financing, particularly for capital expenditures.

Accountability should be complemented by a system for technical and financial support and third-party enforcement using a mix of incentives and penalties (for example, state government, regulator), based on transparent monitoring of key performance indicators about use, safety, functionality, public engagement and responsiveness, and compliance with relevant policies and codes. If poorly designed, monitoring programs can result in regulated entities' making superficial investments to reach targets rather than to provide safe, sustainable services. If unachievable performance targets are set or institutions lack sufficient resources, then the effectiveness of accountability measures is undermined.

Just as a service provider can be held accountable to the service authority with a service level agreement, a similar tool should be used to ensure that service authorities are meeting urban sanitation needs. Some experience suggests that incentives and community or authority accolades can be effective complementary tools to penalties. However, in practice, systems to hold service authorities accountable are scarce and ineffective. This is true even in places where authorities demonstrate compliance with water service delivery targets. For sanitation, there are fewer user fees or revenue streams, and public awareness of and outrage over missing services are lower priority than with missing water services. This is particularly true when considering safe management of waste

EXAMPLE • The Kampala Capital City Authority (KCCA) is a city agency that is mandated to provide safe sanitation facilities in communities. KCCA interprets this as including infrastructure provision, providing facility management, and understanding user sanitation needs and practices. Since 2010, the agency has invested in 560 community sanitation investments, with funding from the government of Uganda and civil society organizations. It also inventoried residential sanitation across the city to have a baseline for future sanitation investment planning and management and to meet its obligation, per the Public Health Act of 2000, to "maintain a clean and sanitary condition in the area of its jurisdiction" (KCCA 2016).

Source: *Kampala Capital City Authority. 2016. "An Inventory of Community Toilets 2016 - Kawempe Division." Sustainable Sanitation Alliance. http://www.susana.org/en/resources/library/details/2574.*

RESOURCE • One often hears about how low-income populations are more likely to have a cell phone than a toilet. Although this is often positioned negatively, an alternative perspective considers: what can be achieved with mobile technology to meet sanitation needs in slums and low-income areas? The GSMA's Mobile for Development program uses grant investments to explore how use of mobile services, mobile financial services, and machine-to-machine connectivity can connect the sanitation service chain or remotely monitor services or provide opportunities for users, service providers, and service authorities to give and receive feedback on service quality. In 2015, Nique and Smartnik published a report considering the role mobile phone technology can play in sanitation, which profiles sanitation-related activities GSMA's team invests in and manages. Source: *https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/08/The-Role-of-Mobile-in-Improved-Sanitation-Access.pdf.*

in non-sewered areas that depend on FSM. Accordingly, compliance systems are more difficult to design and enforce. Political will and public education are critically important tools for increasing accountability among both service authorities and service providers.

A high-level outline of key questions and guidance relating to service authorities is provided in figure 6.1.

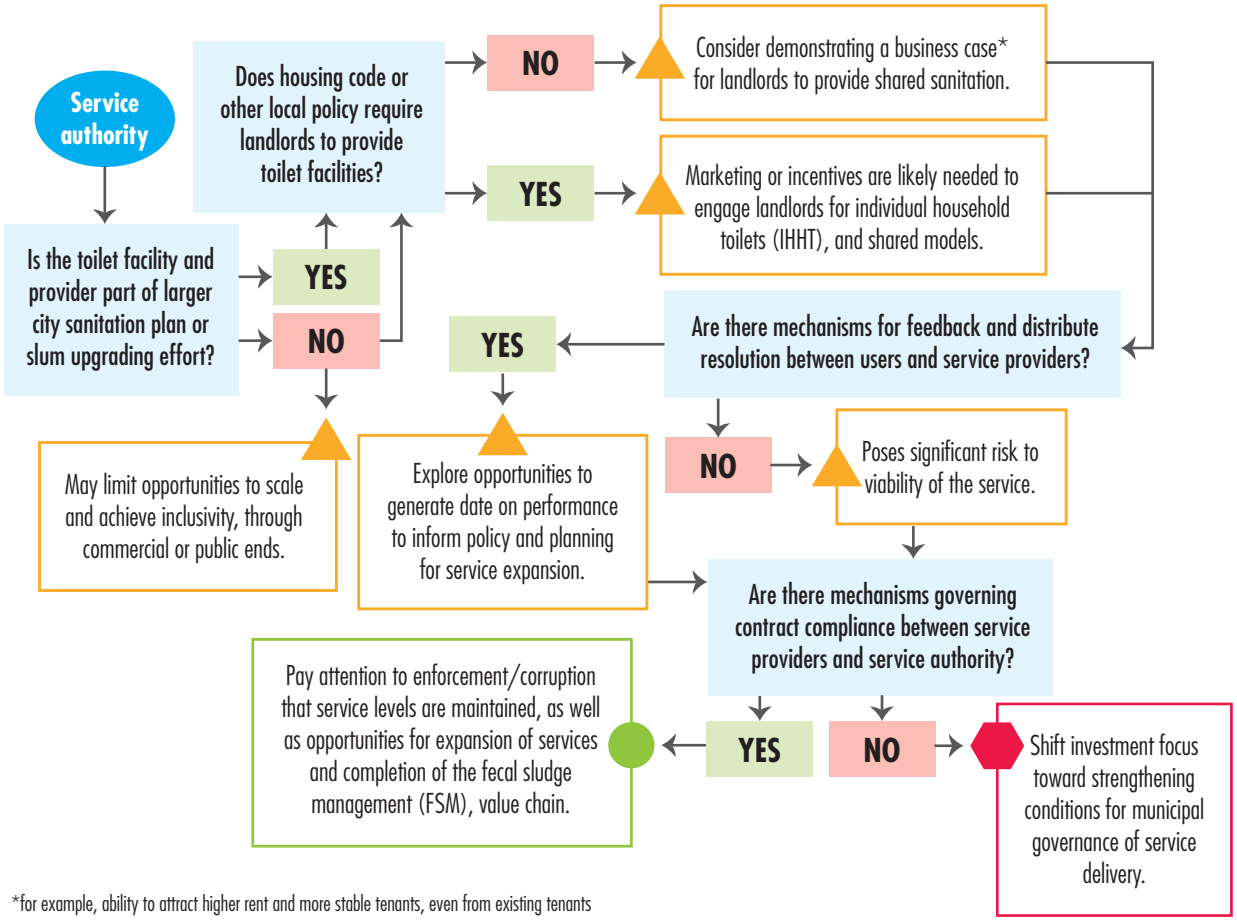


Figure 6.1 • Decisions and Alternatives for Service Authorities

EXAMPLE • The city of Warangal implemented an app-supported public toilet monitoring system. Sanitary inspectors randomly visit and rate each privately operated public toilet according to the elements of the operator's service level agreement with the city. Users can also rate a facility's condition by picking one of four rating buttons located at the toilet facility. These data are summarized and shared with the city commissioner weekly. Because the commissioner has been willing to hold providers accountable for ratings, by rescinding contracts for noncompliance, operators have demonstrated improved adherence to service levels set forth in their contracts. The system has been in place for a few years, and its durability has not yet been determined. Source: *Warangal city sanitation project reports. For additional information, see http://swachhwarangal.com/Access.aspx.*

7. CONCLUSION

The Sustainable Development Goals (SDGs) established an ambitious and necessary target for sanitation: to achieve universal sanitation access and to end open defecation by 2030. The sanitation goals and associated targets and indicators are a step change from the Millennium Development Goals, which had a lower standard based on access to a technology, not a service. Hundreds of millions of people currently use shared toilet models as their primary residential service. The health and social benefits of universal sanitation access in urban areas cannot be attained without having shared and community toilets—in areas where individual household toilets are not viable—and public toilet facilities throughout a city to meet people's sanitation needs throughout the day. The exclusion of these facilities from counting toward the SDG target is a disservice to the real needs of people living in urban slums and low-income areas.

Considering the global ambition to achieve the SDGs by 2030, this document shows that it may be possible to overcome the failures of shared toilet models with an experimental mindset and an appetite for taking risks in the design, implementation, and management of shared toilet models. Risk-taking behavior should be grounded in good data and evidence, which a situation assessment, along with regular engagement with users, service providers, and service authorities, can provide.

This document acknowledges that the business case for shared toilet models is weak at best and will require public or donor funding as well as intentional market structuring that does not preclude the role of the private sector service providers. On the contrary, there are ample opportunities to experiment with business model designs across shared household, community, and public toilet models. Some of the cases illustrated in this report include mandates for gas stations in Warangal to build toilets that are accessible for customers and nearby residents and empowering landlords in Mukuru to convert a 3-by-3 shelter into a latrine with a handwashing station. Some experience, like that of CEPT University in Maharashtra, suggests that an innovation mindset can sometimes require patience because policies and procedures may prevent experimentation with new approaches to expanding services. Overall, experience and evidence emphasize the importance of engaging users at all stages of the process. This is true whether it is to ensure that people who can't walk are not prohibited from toilets because of lack of ramps, as in Ethiopia; that toilets intended for women's use do not end up in courtyards reserved for men and guests, as in India; or simply that services overall are being delivered in adequate quantities and at service levels acceptable to users and service authorities.

Shared household, community, and public toilets are just part of what is needed to ensure safe, appropriate, affordable sanitation access for all urban dwellers. These solutions fit within the broader citywide inclusive sanitation (CWIS) approach, which aims to ensure safely managed access for everyone in a city, using a range of technical solutions, designed and implemented through an adaptive and incremental approach, giving full consideration to reuse and resource recovery options. CWIS also necessitates a focus on having strong institutions with clear roles and responsibilities; planning with secure budgets for both capital and operation and maintenance expenses; and working with other related urban planners and service providers to ensure integrated solutions are sought.

Ideally, this document will cultivate an appetite to learn more, by flagging important challenges and questions that others in the sector have grappled with in various ways. Solutions must be crafted for each situation with iterative, intentional action, framed within systems of accountability. The accompanying appendixes are additional resources to offer guidance and to stimulate new ideas and approaches that can be tried and tested with authorities striving to deliver CWIS.

APPENDIX A • Design Approach

This guide was developed using a two-stage process:

- A ***global literature search*** on shared toilet models offered quantitative and qualitative evidence on the benefits and trade-offs as well as impacts and effects of toilet models. A search of existing tools and guidance documents suggests that there is a wealth of case literature and analysis available to guide the planning, design, and management of public and community toilets. Shared toilet models are generally not as well studied because they are often considered to be in the same category as IHHTs. (And, in practice, many IHHTs are shared with neighbors.) Lessons across even diverse settings and regions offer similar points of guidance for facility planning and management. There is less literature about when and how to link shared toilet models with sewerage or fecal sludge management services.

- ***Key informant interviews*** were conducted with several experts, who bring deep and varied experience designing and managing toilets using a range of models and sanitation approaches relevant to low-income countries. The interviews were used at the start of the development process to identify (and receive) leads to published and unpublished literature and cases, and, as the guide was developed, to inform the direction and content.

The authors also drew on their own experiences as researchers, program managers, and grant makers in the sanitation field, which contributed a view to make this guide short, succinct, and informative for busy planners and decision makers. Wherever possible, linkages to existing resources are explained and referenced, rather than repeated.

APPENDIX B • Review of Practice

Introduction

A core ambition driving policy objectives for citywide inclusive sanitation (CWIS) in low-income countries is to ensure that everyone achieves their human right to sanitation, with dignity. This is in accordance with the global Sustainable Development Goals (SDGs), which established the following as a target: "*By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations*" (United Nations Division for Sustainable Development Goals, 2016, under "Targets," emphasis added). This target is measured by "*proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water*" (United Nations Division for Sustainable Development Goals, 2016, under "Indicators," emphasis added).[1]

The SDGs do not specify whether adequate and equitable sanitation and hygiene should be provided at the household level or if shared, community, and public toilets are viable alternatives. However, the Joint Monitoring Programme (JMP), which is tasked with regularly measuring progress at a global level toward achievement of the SDGs, defines shared, community, and public toilets as a "limited service."

However, ending open defecation does demand that people be provided options to meet their daily sanitation needs. Achieving adequate and equitable sanitation that meets the needs of women, girls, "and those in vulnerable situations" (United Nations Division for Sustainable Development Goals, 2016, under "Targets") demands some consideration of whether shared, community, and public toilets can be sited, designed, implemented, and maintained accordingly.

In terms of user experience, individual household sanitation offers the greatest levels of privacy and dignity for households, even if the inadequacy of fecal sludge management (figure 2.2) still adversely affects their health. The literature about shared household, community, and public toilets is less clear, illustrating a variety of benefits and trade-offs. It is worth considering four main types of literature about these toilet models:

- *Case studies,* often in the form of gray literature, offer a "moment in time" synopsis of models and their effects (positive and negative). Case study literature is often published by nonprofit groups, in association with a project or program.
- *Technical guidance/implementation manuals* for urban sanitation (as a whole) or for a specific model (for example, public toilets), which are often developed in response to a national policy. These guides offer valuable insight as a reference across countries, and within a country, often serving as a bridge between high-level policy goals and the specific ways in which those goals can be achieved.
- *Analytic and decision support tools,* often funded by international donors and implemented by researchers or international organizations, tend to walk readers through a structured process of decision making on different topics, for example selecting a toilet business model or choosing a toilet design. These can also offer valuable insight as the sanitation market continues to evolve. Because the market for CWIS is still emerging, there are many tools available, which may be more or less useful depending on the context. Where possible, brief descriptions of these are provided in the text, in locations where they have the most potential to add value.
- *Academic literature* provides a fourth area of literature, offering quantitative analysis on a range of

topics, for example the health impacts of shared toilets or the factors that contribute to failed maintenance of community or public toilets.

Overall, the literature base continues to grow[2] in accordance with the service providers', researchers', and policy makers' attention paid to and experience of sanitation. One thing is clear: sanitation service delivery in low-income areas is a dynamic and evolving—though still nascent—market, involving public, private, and nongovernmental organization (NGO) and community-based organization (CBO) actors. Cases that prove successful are built on delivery models that are designed to evolve with changing user demand and context and that involve stakeholders who understand that. Innovation is happening concerning how to use existing physical assets and how to leverage necessary financial and social resources to build and maintain new assets.

On the other hand, there are not nearly enough success stories: even the most promising examples of new business models for community and public toilets remain at the stage of early adoption rather than mainstreamed business as usual. The social components of shared, community, and public toilets leave much room for improvement, particularly to meet the needs of women, elderly people, children, and people with disabilities. For this reason, the review demonstrates a bias for individual household toilets (IHHTs) as a primary sanitation option for residential use.

Summary of Experience with Different Toilet Models

Achieving CWIS requires an additional perspective of an individual's needs throughout the day, which may include household, shared, community, and public toilets. Going about one's daily activities inside and outside the home (for example, at work, at the market for shopping, going to the clinic, school, municipal offices), all require an offering of basic sanitation services to meet basic needs and offer dignity. Still, different toilet models offer different benefits and trade-offs, as follows:

- ***Household toilets should always be the first-choice sanitation solution for residential use in low-income areas where IHHTs are technically feasible/advisable and there is ability (which includes time, money, and interest) to invest in cleaning and maintaining them.*** The literature is clear that for reasons of safety (Lennon 2011), accessibility, and ongoing operability (Roma et al. 2010), household-scale sanitation is preferable, particularly for women, children, elderly people, and people with disabilities.

- ***The next best option appears to be household-scale shared toilets, preferably shared by as few families as possible.***[3] Here, the literature depends on perspective: when considering health impact, most research suggests that neither shared, community, nor public toilets are a preferable option. However, many of the poorest rely on shared toilets; some research indicates that shared facilities can be better than IHHTs because the pooled resources enable better quality toilets and better capacity to maintain them (Rheinländer et al. 2015). From a practical perspective, given that 600 million people already use shared, community, and public toilets as their primary form of sanitation (Joint Monitoring Programme 2017), and that for 892 million people, the only alternative to these toilets is open defecation, it is apparent that a diversity of toilet models must at least be considered as part of CWIS planning and investment processes.

- ***Shared household toilets appear to work better with a small number of families who either own the facility or clearly understand their responsibility to maintain its cleanliness over time.*** Some research suggests that shared toilets for extended families or close neighbors, where there are strong social bonds, present a good alternative to an IHHT

and at a lower cost. Multifamily housing situations that are structured within a compound can be particularly conducive to shared toilets, especially if all households are within a larger family network, but even if rooms in the compound are simply rentals (Rheinländer et al. 2015). A key challenge but also a potential driver to wide-scale implementation of shared household toilets is the reality of informal land tenure, and limited living spaces, particularly in crowded urban environments. There is evidence of a business case for landlords to convert some rental space to a shared toilet, as a means to lower turnover of residents (and therefore risk) and earn higher rents (Peal and Evans 2010). When such investments are required, implementation tends to be inconsistent and nearly impossible to enforce in many cases.

- ***Research shows community and public toilets are associated with worse health outcomes and increased risks to safety and of gender-based violence (GBV), especially for women and children, who are particularly vulnerable to rape and assault and the fear/anxiety associated with these threats when using sanitation facilities outside the home.***[4] However, some community and public models seem to fare better than others when certain conditions are met, like proximity, good lighting, and a female attendant (interview with Professor V. Srivinas Chary, Administrative Staff College of India). This suggests that investing in market research to understand the needs and concerns of the community, and being responsive to those needs in the planning and design phase for sanitation, can help improve use. Further engaging the community for performance monitoring is critical, given the diversity of contexts in which services are needed but IHHTs *are not* an option.

- ***Community toilets have a mixed record of providing hygienic, sustainable sanitation services in low-income areas over time.*** In theory, this model offers an opportunity for NGOs or CBOs to mediate between local authorities and residents for sanitation. A common model, seen throughout India (Burra and Patel 2002), occurs in which a local authority lets a contract to an NGO or CBO to build and manage toilet blocks using (often publicly owned) land, with a partial or full subsidy for initial construction cost. In other cases, small towns hire community members of disadvantaged castes to help sweep streets, maintain drains, and manage community toilets. In practice, the effectiveness of this model varies widely within existing case study literature.

- ***The longevity of a community toilet model, and the success of a toilet model in a given location, may be connected with the level of trust between users and service providers.*** When the facility falls into disrepair because of weak management, communities are less likely to trust a new management model or regime for the same asset. Because of this, community members should be involved in the design, implementation, and monitoring of their toilet facilities; engagement requirements can be built into procurement processes. Although such engagement may not result in substantial tweaks to the physical design or infrastructure used, it does allow the service provider to market the benefits of the community toilet and educate its ever-changing customer base on how to use it (Roma et al. 2010). It is critical that women and girls are encouraged and able to safely engage in this process.

- ***Public toilets also offer the least best experience for residential use, not least because public toilets are typically designed for transient use*** (for example, at bus stations or markets). The basic facility structure is often sparse because it is intended for on-the-go-urination and is often run on a pay-per-use basis, which presents affordability issues for residential users, for whom the alternative is most likely open defecation.

- Still, public toilets are extremely important for urban residents, and particularly low-income urban residents, when they are away from home. For service providers, these toilets tend to be financially viable but offer low service levels if not monitored by government. The large number of emerging citizen monitoring mobile apps could play a key role in supporting monitoring.

- ***With the right conditions, shared, community, and public toilet models can work; however, the long-term financial viability depends on users, service providers, and service authorities maintaining a focus on delivering a safe and affordable basic sanitation service.*** A successful operating model seems to depend on users' contributions of time and opportunities to provide meaningful feedback, while a successful revenue model requires attention to ensure long-term funding sources. These can include public subsidies; private advertising; sale of ancillary services (a kiosk, a mobile phone charging station, water, a meeting room, and so on); and long-term budgetary assistance provided by either international donors or corporate/industry partners, in addition to revenues associated with fees for using the toilet.

Questions for Further Research

The literature review highlighted a number of actionable recommendations but also surfaced many questions about the different delivery models for community and public toilets and their underlying revenue and operating structures. In particular, discussion of how institutional forces shape and support different toilet models tends to be high level and generic, rather than offering specific guidance for practitioners. Where specific tools have demonstrated some success, like public-private partnership (PPP) service level agreements and various accountability mechanisms, there is limited indication that these are being either mainstreamed into practice at city scale or adopted beyond a given city. It is unclear why these aren't replicated beyond an initial project, but it could be because of high transaction costs or low political will. Further research might also be done on appropriate and effective regulatory approaches for ensuring service standards, environmental safeguards, and tariff structures are all in place.

Policy questions emerged about how landlords can be more effectively incentivized to embrace shared household sanitation in their compounds and apartment structures. Several studies cite the problem that safe, affordable, and equitable sanitation is a challenge in densely populated areas where land is not available. Many describe successful pilots or experiments. Few offer examples of scaled solutions that are sustained over time. Enforcement is a challenge particularly where layers of formal and informal ownership and management agreements are in play over land, buildings, and room blocks within properties.

Research into the long-term societal costs and benefits of individual household sanitation services relative to shared, community, and public toilet models, and in particular, looking at the lifecycle costs of IHHT versus these other models, could help inform financing discussions about what gets funding, when, and why. For example, given the ongoing maintenance costs and high rates of failure, it may be more cost-effective public policy in some cases to use public funds to create conditions that enable household investment in IHHTs or invest directly in household sanitation. Even where IHHTs are prevalent, however, residents are away from home and on the go, often for long days, and renters float in and out of communities seasonally. As such, community and public toilets will remain critical services for any city to provide.

Finally, given the growing recognition of fecal sludge management gaps at a city scale, there is a need for more policy and market development research that connects different toilet models to the wider ecosystem of fecal

sludge management, and in particular, where there are strong business cases for combining different segments of the service chain (for example, collection and transportation). Exploration of new models that connect a community or public toilet with transportation and treatment may increase the longevity and viability of these models. Use of mobile technology and data science, connected with mobile money, could drive down costs and increase the operating efficiency of urban sanitation, in turn drawing new entrants to engage in the market. Although these types of innovation may not immediately resolve issues of accountability, proximity, affordability, and safety questions for the most vulnerable, they could contribute to a better understanding of what CWIS could look like in practice.

Notes

1 United Nations Division, 2016, "Sustainable Development Goal 6," United Nations, sustainabledevelopment.un.org/sdg6. For information about the SDGs for water supply and sanitation, see https://sustainabledevelopment.un.org/sdg6.

2 The diversity of literature reviewed for this study is available in appendix E.

3 The literature is less clear on a set number where health benefits—and ongoing cleanliness and management—start to deteriorate. As part of the development process for the SDGs, the Sanitation Task Team recommended a benchmark of no more than five families or 30 people as a proxy for basic sanitation, despite limited evidence on the impact of shared toilets (see Evans et al. 2017).

4 Gius and Subramanian (2015); "A few studies are, however, showing that young men and boys, like women, may also be at risk of violence near public latrines and water points that are exposed and especially dangerous after dark" (Sommer et al. 2015, qtd. in FSG 2017).

APPENDIX C • Indicative Questions to Ask as Part of a Sanitation Situation Assessment to Inform Shared Toilet Model Design, Planning, Implementation, and Management

I. SUMMARY QUESTIONS	
1	Name of project/program/initiative
2	Location for the project/program/initiative
3	Implementation partner lead
4	Government lead (if different than implementation lead)
5	Other key partners (list using commas to separate)
6	Toilet category (Select one from the dropdown list)
7	Current management model (Select one from the dropdown list)
8	Number of households in the city practicing open defecation
9	Number of households depending on public latrines
10	Number of households with latrine facility on premises
11	Ratio of households per seat of a community toilet
12	Ratio of households per seat of a community toilet in slum areas
13	Ratio of households per seat of a community toilet in non-slums
14	When did development on the project start?
15	When did services start? (Or, when are they expected to start?)
16	How many community block toilets are there?
17	How many functional seats are provided in the facility?
18	How many units does/did the program aim to install (shared latrines or toilet blocks)?
19	How many units are currently constructed?
20	Funding level
21	Key funders

II. DEFINING CHARACTERISTICS	
22	Community type (formal, low-income, dense; informal, low-income, dense "slum"; peri-urban, low income; high water table/challenging)
23	Primary user market segmentation (commuters, markets, residential)
24	Primary market driver (poor existing services, no existing services, top-down government mandate)
25	Instigating service provider (motivated to provide services—landlord, community group, local government, and so on)
III. SITING CRITERIA (LAND SELECTION)	
26	What is current demand for sanitation facilities in the targeted location? (# people/day; # uses/day)
27	How many people (households) were identified as potential shared toilet users?
28	How many other toilet blocks/facilities are available to this site location?
29	Who owns the land where the shared toilet is located?
30	Who owned it previous to initiation of the sanitation project?
31	Who currently owns the land? (government', private, community, households)
32	What utilities were already on site before initiation of the sanitation project?
33	Is the sanitation facility located within a larger city sanitation plan?
34	Was construction of the sanitation facility financed within a city sanitation plan?
35	Was construction of the sanitation facility located within a slum upgrading project?
36	Was construction of the sanitation facility financed within a larger slum upgrading project?

IV. PHYSICAL CHARACTERISTICS	
37	Numbers of distinct facilities planned as part of the program
38	Toilets per block (target ratio of toilets:users, by gender)
39	Number of toilets per facility
40	Number of users per seat (modeled)/day
41	Are handwashing taps provided?
42	Are handicap facilities included?
43	Are children's' facilities included?
44	Bathing facilities included?
45	Laundry facilities included?
46	Meeting room included?
47	Do facilities generate biogas?
48	Do facilities provide lighting at night?
49	Do facilities include a water kiosk (fee based?)
50	Do facilities include a public standpipe (free)?
51	Do facilities include overhead water storage?
52	Do facilities include a caretaker room?
53	Do facilities have menstrual hygiene management disposal options?
54	Is graywater combined into the fecal sludge treatment system?
55	How is the fecal waste/urine contained?
V. COMMUNITY ENGAGEMENT	
56	Are users/customers involved in the design and initial development of facilities?
57	What level of engagement (meeting to tell them through co-creating)?
58	Are users/customers involved in the management of the facilities?
59	What level of engagement (meeting to tell them through co-creating)?
60	Are users/customers involved in the monitoring of the facilities?
61	What level of engagement (meeting to tell them through co-creating)?
62	Are users/customers involved in outreach and education efforts?
63	What level of engagement (meeting to tell them through co-creating)?

VI. MANAGEMENT (OPERATING) MODEL	
64	What entity is the primary manager of the facilities?
65	What type of entity manages the facilities?
66	Who is the hiring or contracting entity for the facilities?
67	What type of contract governs operations?
68	What is the average number of units managed under each contract?
69	How many contracts does the primary manager hold?
70	Do the facilities employ staff?
71	How many staff does the average facility employ/day?
72	How many men/women does the facility employ?
73	How are men/women selected for their roles?
74	For the following roles, note # of staff per facility hired or contracted (outsourced to third parties):
75	Cleaning
76	Security
77	Maintenance/repairs
78	Bookkeeping
79	Fund managers
80	On-site manager
81	Community/customer engagement
82	Does the city pay the operator fees for providing management service?
83	Does the operator have a multiyear contract with the city?
84	Does the facility pay the city for the right to operate a sanitation facility (for example, license, registration)?
85	Does the facility include management capacity building efforts?
VII. FINANCING MODEL—DESIGN TO CONSTRUCTION COSTS	
86	What agency sponsored/s the initial design and development costs?
87	Was/is the focus for the project on rehabilitation or new construction?
88	Who paid/pays for initial design and development costs (who was/is the lead)?
89	Who paid/pays the construction costs (from what budget)?
90	Who owns the core assets of the sanitation facility?

VIII. FINANCING MODEL—OPERATIONS AND MAINTENANCE	
91	Do facilities receive tax subsidies for operations and maintenance?
92	Do facilities receive financial operating and maintenance support from nongovernmental organizations or Project Aid?
93	Do facilities receive financial support for operating and maintenance from any special central or state government initiative?
94	Do facilities pay for power utilities (per month)?
95	Do facilities pay for water (per month)?
96	Do facilities pay for telecom utilities (per month)?
97	Who is responsible for paying the utilities bills?
98	Do facilities pay for sludge removal (monthly, yearly)?
99	Do facilities pay for stored water, if trucked?
100	Do facilities pay for cleaning or other suppliers to provide services?
101	What are the total operating costs for the facility per month?
IX. REVENUE MODEL	
102	Do the facilities collect user fees?
103	Does the facility charge a fee for individual users or for multiple users by household?
104	How do facilities collect user fees? (single-user fee model)
105	How else does the facility collect user fees (multiuser fee model)?
106	Does the facility generate other revenues (whether in practice or originally planned)?
107	Does the city provide operator fees to the service provider?
108	How well do you agree with the following statement: the facility's users are able to pay for services under the current revenue model?
109	How well do you agree with the following statement: facilities" users are willing to pay for services under the current revenue model?
110	Have facilities adapted their revenue model over time?
111	Why or why not?
112	What are an average facility's revenues per month?
113	What strategies do facilities use to cover gaps (if these exist)

X. MONITORING/SUPPORT SYSTEMS	
114	Who monitors facility performance?
115	What department monitors for legal compliance?
116	How often do they monitor (# of visits per quarter/year)?
117	What entity monitors for contract compliance?
118	How often do they monitor (# of visits per quarter/year)?
119	Do facilities ever have to close for compliance issues (by government order)?
120	Has a facility ever paid fines or penalties for noncompliance?
121	Monitoring assessment mode:
122	Monitoring assessment criteria:
XI. REGULATORY & ENABLING ENVIRONMENT	
123	Are users involved or engaged to improve services/system performance?
124	What are toilet-regulated design parameters for the following issues, if any known?
125	Gender
126	User ratios
127	Distance from households
128	Other
129	What, if any, of the following toilet management requirements or limitations are defined by regulation?
130	Hours of operation
131	Lighting
132	Pricing
133	Waste disposal
134	Does housing code or other local policy require landlords to provide toilet facilities?
135	Ratio per user
136	Pricing
137	Waste disposal
138	Are cities required to provide low-income communities basic utility services?
139	Are there mechanisms for dispute resolution between users/customers and facility management/owners?

APPENDIX D. A Day in the Life

	Mother (Age: 32)	Father (Age: 34)	Grandmother (Age: 58)	Daughter (Age: 12)	Son (Age: 3)
A day in the life	**Headed to the market to sell vegetables, then the local municipal office to pay a bill. If there's time, will go to the clinic with son for diarrhea treatment.**	**Headed to work, in an industrial shop located several miles from home. Doesn't plan to return home until evening.**	**Plans to garden to grow vegetables, then watch grandson at home before cooking supper. Suffers from glaucoma and incontinence.**	**Attends school 3 miles away, walks. Recently started menstruating. Is finding ways to manage because her education is important to her.**	**Played yesterday with friends in the dirt outside the house, now has diarrhea.**
Early-morning sanitation needs	Uses IHHT, and supervises her son's toilet use, including hand washing.	IHHT busy, goes with men to open defecation (OD) field because community toilet no longer functional.	Uses IHHT	Uses IHHT, prepares rags to bring to school for menstrual hygiene management.	Uses IHHT with support from mother
Midmorning sanitation needs	Uses latrine in the market. There is no light, water, or soap. Others have defecated on the floor. She holds her breath, goes quickly.	Urinates outside workplace—there is no toilet	Uses IHHT. Grateful she doesn't have to walk 100 meters to the community toilet anymore.	Uses pit latrine behind the school to change rags and urinate. There is no water or soap. Used rags go into pit hole because no other way to store them during the day	Uses IHHT with support from grandmother. Grateful he doesn't have to use community toilet. They are scary and smelly.
Afternoon sanitation needs	Spends 3 hours in a line at municipal office. No bathrooms there. Loo at the bus station is crowded with men and smells of urination. Opts to hold it.	Urinates outside workplace—there is no toilet	Uses IHHT	Hastens home to change and boil rags. Is grateful that the stand-post for water is 50 yards from her house, so she doesn't have to walk so far to fetch water.	Uses IHHT with support from grandmother
Evening sanitation needs	At the clinic, there are no toilets. Visitors and staff use an open defecation lot behind the clinic. Opts to hold it a bit longer, but has to take son out back.	Goes to public toilet on the way home from work. There's a line, so he urinates against the outside wall.	Uses IHHT	Uses IHHT	OD field at clinic

Table D.1 • A Day In The Life of a Family that Uses an IHHT as a Primary Form of Sanitation

	Mother (Age: 32)	Father (Age: 34)	Grandmother (Age: 58)	Daughter (Age: 12)	Son (Age: 3)
A day in the life	**Headed to the market to sell vegetables, then the local municipal office to pay a bill. If there's time, will go to the clinic with son for diarrhea treatment.**	**Headed to work, in an industrial shop located several miles from home. Doesn't plan to return home until evening.**	**Plans to garden to grow vegetables, then watch grandson at home before cooking supper. Suffers from glaucoma and incontinence.**	**Attends school 3 miles away, walks. Recently started menstruating. Is finding ways to manage because her education is important to her.**	**Played yesterday with friends in the dirt outside the house, now has diarrhea.**
Early-morning sanitation needs	Queues for shared toilet (with four other families) with son. Son unable to wait, but she is able to use and wash both their hands. She also cleans around the toilet area for the next user.	Queue for shared toilet too long. Goes with men to open defecation (OD) field.	Can't hold it, urinates in a bucket, to empty later in the small garden plot	Uses shared toilets, prepares rags to bring to school for menstrual hygiene management.	Wait was too long, spoils his pants, which are removed for later laundering
Midmorning sanitation needs	Uses latrine in the market there is no light, water, or soap. Others have defecated on the floor. She holds her breath, goes quickly as she can without getting feces on her clothes and feet.	Urinates outside work-place—there is no toilet	Unable to reach the shared toilet without urinating. Grateful the walk isn't far to change into fresh clothing.	Uses pit latrine behind the school to change rags and urinate. There is no water or soap. Used rags go into pit hole because no other way to store them during the day.	Uses shared toilet with support from grandmother. Grateful he doesn't have to use community toilet. They are scarier and smellier.
Afternoon sanitation needs	Spends 3 hours in a line at municipal office. No bathrooms there. Loo at the bus station is crowded with men and smells of urination. Opts to hold it.	Urinates outside work-place—there is no toilet	Uses shared toilet	Hastens home to change and boil rags. Is grateful that the stand-post for water is 50 yards from her house, so she doesn't have to walk so far to fetch water.	Uses shared toilet with support from grandmother
Evening sanitation needs	At the clinic, there are no toilets. Visitors and staff use an open defecation lot behind the clinic. Opts to hold it a bit longer, but has to take son out back.	Goes to public toilet on the way home from work. There's a line, so he urinates against the outside wall.	Uses shared toilet	Uses shared toilet, and cleans it, as it is her family's week to make sure it is well maintained.	OD field at clinic

Table D.2 • A Day in the Life of a Family that Uses a Shared Household Toilet Model as a Primary Form of Sanitation

	Mother (Age: 32)	Father (Age: 34)	Grandmother (Age: 58)	Daughter (Age: 12)	Son (Age: 3)
A day in the life	**Headed to the market to sell vegetables, then the local municipal office to pay a bill. If there's time, will go to the clinic with son for diarrhea treatment.**	**Headed to work, in an industrial shop located several miles from home. Doesn't plan to return home until evening.**	**Plans to garden to grow vegetables, then watch grandson at home before cooking supper. Suffers from glaucoma and incontinence.**	**Attends school 3 miles away, walks. Recently started menstruating. Is finding ways to manage because her education is important to her.**	**Played yesterday with friends in the dirt outside the house, now has diarrhea.**
Early-morning sanitation needs	Goes with son to community toilet, which has a long line. After son's protest, she supervises his open defecation (OD) while she holds it.	Goes with men to OD field because community toilet too crowded.	Uses flying toilet in the house	Wakes before dawn when the toilet block opens. Goes to a semiprivate area to OD, is grateful not to be harassed by men. Prepares rags to bring to school for menstrual hygiene management.	Protests using community toilet, OD instead.
Midmorning sanitation needs	Uses latrine in the market there is no light, water, or soap. Others have defecated on the floor. She holds her breath, goes quickly as she can without getting feces on her clothes and feet.	Urinates outside workplace—there is no toilet	Unable to reach the community toilet without urinating. Grateful the walk isn't far to change into fresh clothing.	Uses pit latrine behind the school to change rags and urinate. There is no water or soap. Used rags go into pit hole because no other way to store them during the day.	Uses community toilet with support from grandmother. He won't go in alone, because they are scary and smelly.
Afternoon sanitation needs	Spends 3 hours in a line at municipal office. No bathrooms there. Loo at the bus station is crowded with men and smells of urination. Opts to hold it, and use the community toilet when she gets home.	Urinates outside workplace—there is no toilet	Uses community toilet	Hastens home to change and boil rags. Is grateful that the stand-post for water is 50 yards from her house, so she doesn't have to walk so far to fetch water.	Uses community toilet with support from grandmother. He won't go in alone, because they are scary and smelly.
Evening sanitation needs	At the clinic, there are no toilets. Visitors and staff use an open defecation lot behind the clinic. Opts to hold it a bit longer, but has to take son out back.	Goes to public toilet on the way home from work. There's a line, so he urinates against the outside wall.	Uses community toilet	Uses community toilet	OD field at clinic

Table D.3 • A Day in the Life of a Family that Uses a Community Toilet Model as a Primary Form of Sanitation

	Mother (Age: 32)	Father (Age: 34)	Grandmother (Age: 58)	Daughter (Age: 12)	Son (Age: 3)
A day in the life	**Headed to the market to sell vegetables, then the local municipal office to pay a bill. If there's time, will go to the clinic with son for diarrhea treatment.**	**Headed to work, in an industrial shop located several miles from home. Doesn't plan to return home until evening.**	**Plans to garden to grow vegetables, then watch grandson at home before cooking supper. Suffers from glaucoma and incontinence.**	**Attends school 3 miles away, walks. Recently started menstruating. Is finding ways to manage because her education is important to her.**	**Played yesterday with friends in the dirt outside the house, now has diarrhea.**
Early-morning sanitation needs	Queues for public toilet with son. Son unable to wait, but she is able to use and wash both their hands. She also cleans around the toilet area for the next user.	Queue for shared toilet too long. Goes with men to open defecation (OD) field.	Can't hold it, urinates in a bucket, to empty later in the small garden plot	Uses public toilets, prepares rags to bring to school for menstrual hygiene management.	Wait was too long, spoils his pants, which are removed for later laundering
Midmorning sanitation needs	Uses latrine in the market there is no light, water, or soap. Others have defecated on the floor. She holds her breath, goes quickly as she can without getting feces on her clothes and feet.	Urinates outside workplace—there is no toilet	Uses flying toilet in the house to defecate.	Uses pit latrine behind the school to change rags and urinate. There is no water or soap. Used rags go into pit hole because no other way to store them during the day.	Uses flying toilet for defecation. with support from grandmother, and urinates outside.
Afternoon sanitation needs	Spends 3 hours in a line at municipal office. No bathrooms there. Loo at the bus station is crowded with men and smells of urination. Opts to hold it until she's closer to home.	Urinates outside workplace—there is no toilet	Urinates in a bucket to empty outside later	Hastens home to change and boil rags. Is grateful that the stand-post for water is 50 yards from her house, so she doesn't have to walk so far to fetch water.	Uses flying toilet for defecation. with support from grandmother, and urinates outside.
Evening sanitation needs	At the clinic, there are no toilets. Visitors and staff use an open defecation lot behind the clinic. Opts to hold it a bit longer, but has to take son out back.	Goes to public toilet on the way home from work. There's a line, so he urinates against the outside wall.	Urinates in a bucket to empty outside later	Runs to use public toilets with determination, to overcome fear of assault. The streets have poor lighting and the stalls are dark.	OD field at clinic

Table D.4 • A Day in the Life of a Family that Uses a Public Toilet Model as a Primary Form of Sanitation

BIBLIOGRAPHY

Arvind, Jasmitha. 2016. "Case Studies of Community Managed Toilets in Urban Areas. Civic Action Group." Citizen Consumer and Civic Action Group, October 13. https://www.cag.org.in/blogs/case-studies-community-managed-toilets-urban-areas.

Awunyo-Akaba, Y., J. Awunyo-Akaba, M. Gyapong, K. Senah, F. Konradsen, and T. Rheinländer. 2016. Sanitation Investments in Ghana: An Ethnographic Investigation of the Role of Tenure Security, Land Ownership and Livelihoods. *BMC Public Health* (16): 584.

Ayee, J., & R. Crook (2003) *'Toilet Wars': Urban Sanitation Services and the Politics of Public-Private Partnerships in Ghana.* Working paper series, 213. Brighton, United Kigdom: IDS.

Babe, Ann. 2016. "There's a Message for City Planners in Cape Town Plumbing Poll: Fueled by Data, Residents Demand a Basic Human Right." *Next City,* September 26. https://nextcity.org/features/view/khayelitsha-cape-town-toilets-plumbing-poverty-data-collection.

Baker, Judy L., and Kim McClain. 2009. *Private Sector Initiatives in Slum Upgrading.* Urban Paper UP-8. Washington, DC: World Bank Group.

Barndhart, Sharon, Judy Chevalier, and Mushfiq Mobarak. 2011. "Communal Sanitation Solutions for Urban Slums in Orissa, India." Abdul Latif Jameel Poverty Action Lab. https://www.povertyactionlab.org/evaluation/communal-sanitation-solutions-urban-slums-orissa-india.

Biran, A., M. W. Jenkins, P. Dabrase, and I. Bhagwat. 2011. "Patterns and determinants of communal latrine usage in urban poverty pockets in Bhopal, India." *Tropical Medicine & International Health,* 16 (7): 854–62. doi:10.1111/j.1365-3156.2011.02764.x.

Boex, Jamie, Ammar A. Malik, Devanne Brookins, and Ben Edwards. 2016. *Dynamic Cities? The Role of Urban Local Governments in Improving Service Delivery Performance in Africa and Asia.* Washington DC: Urban Institute.

Burra, Sundar, Sheela Patel, and Thomas Kerr. 2003. *Community-Designed, Built and Managed Toilet Blocks in Indian Cities.* London, United Kingdom: IIED.

Chirrute, Francisco, Guy Norma, and Sam Parker. 2011. *Financing Communal Toilets: The Tchemulane Project.* WSUP Practice Note #002. London, United Kingdom: Water & Sanitation for the Urban Poor.

Corburn, Jason, and Chantal Hildebrand. 2015. "Slum Sanitation and the Social Determinants of Women's Health in Nairobi, Kenya." *Journal of Environmental and Public Health,* 2015 (209505). doi:10.1155/2015/209505.

Cordes, Jillian. 2016. *Should Public Toilets Be Part of Urban Sanitation Solutions for Poor Families Living in Slums?* SaniPath. http://sanipath.org/wp-content/uploads/2016/04/SaniPath-Public-Latrin-Policy-Brief.pdf.

Cowling, Ruby. 2013. *100% Access by Design: A Financial Analysis Tool for Urban Sanitation.* WSUP Practice Note #009. London, United Kingdom: Water & Sanitation for the Urban Poor.

Craig, Rebecca, Issaka Balima Musah, and Georges Mikhael. 2016. *Improving the Quality of Public Toilet Services in Kumasi.* London, United Kingdom: Water & Sanitation for the Urban Poor.

Drabble, Sam and Akhilesh Guatam. 2017. "A Ward-by-Ward Approach to Eliminating Open Defecation: Experience from Visakhapatnam, India." Water &

Sanitation for the Urban Poor Advisory Services. http://www.wsup.com/resource/a-ward-by-ward-approach-to-eliminating-open-defecation-experience-from-visakhapatnam-india/.

Edwards, Ben, Tanvi Nagpal, Rachel Rose, Abdul Nash Mohammed, André Uandela, Mark Wolfsbauer, and Guy Norman. 2015. *Municipal Finance for Sanitation in Three African Cities.* WSUP Discussion Paper #007. http://www.wsup.com/wp-content/uploads/2015/07/DP007-Municipal-finance-for-sanitation-in-three-African-cities-PRINT-VERSION.pdf.

Ernst & Young (2014). Assessing PPP options to improve provision of public toilet facilities in Kumasi. Unpublished report prepared by Ernst & Young with funding from PPIAF.

Evans, B., C. van der Voorden, and A. Peal. 2009. *Public Funding for Sanitation: The Many Faces of Sanitation Subsidies.* Geneva, Switzerland: Water Supply & Sanitation Collaborative Council.

Evans, Barbara, Andrés Hueso, Richard Johnston, Guy Norman, Eddy Pérez, Tom Slaymaker, and Sophie Trémolet. 2017. "Limited Services? The Role of Shared Sanitation in the 2030 Agenda for Sustainable Development." *Journal of Water Sanitation and Hygiene for Development* 7 (3): 349–51. doi:10.2166/washdev.2017.023.

Gebrehiwot, Desta. 2016. "Ethiopia: Due Care to City Toilets as Public Phone Turns to Public Toilet." *Ethiopian Herald*, February 13. http://allafrica.com/stories/201602150498.html.

Getahun, Worku, and Adam Adinew. 1999. *Wastewater Management in Addis Ababa.* Paper presented at 25th WEDC Conference. Addis Ababa, Ethiopia.

Gius, Mark, and Ramesh Subramanian. 2015. "The Relationship Between Inadequate Sanitation Facilities and the Economic Well-Being of Women in India." *Journal of Economics and Development Studies* 3 (1). doi:10.15640/jeds.v3n1a2.

GIZ. 2016. "Making a Case for Public Toilets." *Why Public Toilets* (blog). Accessed September 26, 2017. giz.mediagenies.com/content/blog/why-public-toilets#dexp-accordion-item-1506394234--3.

Gramalaya and WaterAid India. 2008. *Tiruchirappalli Shows the Way.* New Delhi, India: Gramalaya and WaterAid India.

Günther, Isabel, B. Charles Niwagaba, Christoph Lüthi, Alexandra Horst, Jans-Joachim Mosler, and K. Innocent Tumwebaze. 2012. *When Is Shared Sanitation Improved Sanitation?: The Correlation Between Number of Users and Toilet Hygiene.* doi:10.13140/RG.2.2.10422.09288.

Hawkins, Peter, and Odete Muximpua. 2015. *Developing Business Models for Fecal Sludge Management in Maputo.* Washington, DC: WSP/World Bank.

Hawkins, Peter, Isabel Blackett, and Chris Heymans. 2013. *Poor-Inclusive Urban Sanitation: An Overview.* Washington, DC: World Bank.

Heijnen, Marieke, Oliver Cumming, Rachel Peletz, Gabrielle Ka-Seen Chan, Joe Brown, Kelly Baker, and Thomas Clasen. 2014. "Shared Sanitation versus Individual Household Latrines: A Systematic Review of Health Outcomes." *PLoS One* 9 (4). doi:10.1371/journal.pone.0093300.

Husain, Mishal. 2015. "The Dhaka Slum Being Transformed by Women." BBC News, July 1. https://www.bbc.com/news/world-asia-33308274.

IDEO. n.d. "Clean Team - In-Home Toilets for Ghana's Urban Poor." Ideo.org. Accessed September 26, 2017. www.designkit.org/case-studies/1.

IDEO. n.d. "What Is Human-Centered Design?" IDEO.org. Accessed September 26, 2017. www.designkit.org/human-centered-design.

India Ministry of Urban Affairs and Employment. 1995. "Guidelines on Community Toilets." N.P.: Ministry of Urban Affairs and Employment and UNDP-World Bank Water and Sanitation Programme.

India Ministry of Urban Development. 2014. *Guidelines for Swachh Bharat Mission (SBM).* New Delhi, India: India Ministry of Urban Development.

Intellecap. *Slum Sanitation: Market Landscape and Options for Business Design.* Ratna Sinroja and Pramod Majety of Intellectual Capital Advisory Services Ltd. http://www.inclusivebusinesshub.org/resource/project-resource-slum-sanitation-market-landscape-and-options-for-business-design.

IRC. n.d. "Faecal Waste Flow Calculator." IRC. https://www.ircwash.org/tools/faecal-waste-flow-calculator.

IRC. n.d. "Sanitation Supply and Demand Tool." IRC. https://www.ircwash.org/tools/sanitation-demand-and-supply-tool.

Joint Monitoring Programme. 2017. "Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines." Geneva: World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). Licence: CC BY-NC-SA 3.0 IGO.

Joshi, P., Vaidya, C. & Shukla, S., 2008. "Improving Urban Poor's Access to Sanitation: Community-Led Sanitation Program, Sangli, India." 33rdWEDC International Conference, Accra, Ghana. http://www.citiesalliance.org/sites/citiesalliance.org/files/CAFiles/Projects/Final_P090339_WEDC_International_Conference_in_Accra_05_Nov_2007.pdf

Joshi, Deepa, Ben Fawcett, and Fouzia Mannan. 2011. "Health, Hygiene and Appropriate Sanitation: Experiences and Perceptions of the Urban Poor." *Environment and Urbanization,* 23 (1): 91–111. doi:10.1177/0956247811398602.

Lennon, Shirley. 2011. "Fear and Anger: Perceptions of Risks Related to Sexual Violence Against Women Linked to Water and Sanitation in Delhi, India." London, United Kingdom: SHARE.

Lutalo, Sanyu Sarah Senkatuka. 2017. *Ghana - OBA Urban Sanitation Facility for the Greater Accra Metropolitan Area (GAMA): P145139 - Implementation Status Results Report: Sequence 03.* Washington, DC: World Bank.

Mara, D. 2016. "Shared Sanitation: To Include or to Exclude?" *Transactions of the Royal Society of Tropical Medicine and Hygiene* 110 (5): 265–7. www.ncbi.nlm.nih.gov/pubmed/27198209.

McGranahan, Gordon. 2013. *Community-Driven Sanitation Improvement in Deprived Urban Neighbourhoods: Meeting the Challenges of Local Collective Action, Co-Production, Affordability and a Trans-Sectoral Approach*. doi:10.17037/PUBS.01236350.

Mehta, Meera, and Dinesh Mehta. 2016. *Assessing Credit Options for Household Sanitation in Urban Areas.* Ahmedabad, India: CEPT University.

Mikhael, Georges, Issaka Balima Musah, and Rebecca Craig. 2016. *A Toilet in Every Compound: Improving Access to Compound Sanitation in Kumasi and Ga West*. WSUP Practice Note #026. London, United Kingdom: Water & Sanitation for the Urban Poor.

Nique, Michael, and Helene Smartnik. 2015. "The Role of Mobile in Improved Sanitation Access." GSMA, August 25. Accessed September 26, 2017. https://www.gsma.com/mobilefordevelopment/programme/m4dutilities/the-role-of-mobile-in-improved-sanitation-access.

Norman, Guy, 2011. "When are communal or public toilets an appropriate option?" Topic Brief 001, London, United Kingdom: Water & Sanitation for the Urban Poor. https://www.wsup.com/insights/when-are-communal-or-public-toilets-an-appropriate-option/

O'Keefe, Mark, Christoph Lüthi, Innocent Kamara Tumwebaze, and Robert Tobias. 2015. "Opportunities and Limits to Market-Driven Sanitation Services: Evidence from Urban Informal Settlements in East Africa." 2015. Environment and Urbanization 27 (2): 421–40.

O'Reilly, Kathleen. 2010. "Combining Sanitation and Womens Participation in Water Supply: An Example from Rajasthan." *Development in Practice,* 20 (1): 45–56. doi:10.1080/09614520903436976.

Obeng, Peter Appiah, Bernard Keraita, Sampson Oduro-Kwarteng, Henrik Bregnhøj, Robert C. Abaidoo, and Flemming Konradsen. 2015. "The Latrine Ownership Ladder: A Conceptual Framework for Enhancing Sanitation Uptake in Low-Income Peri-Urban Settings." *Management of Environmental Quality: An International Journal,* 26 (5): 752–63. doi:10.1108/MEQ-05-2014-0079.

Osterwalder, Alexander. 2010. "Mapping Business Models (a Knowledge Game)." *Business Model Alchemist* (blog), January 26. Accessed September 26, 2017. businessmodelalchemist.com/blog/2010/01/mapping-business-models-a-knowledge-game.html.

Pathak, Bindeshwar. 1999. "Sanitation Is the Key to Healthy Cities—A Profile of Sulabh International." *Environment and Urbanization* 11 (1): 221–30. doi:10.1177/095624789901100104.

Peal, A. J., and Barbara Evans. 2010. *Breaking Barriers in Water and Sanitation Service Delivery to Informal Settlements: Case Study of the Mukuru Model.* Nairobi, Kenya: Practical Action.

Peal, A. J., and Sam Drabble. 2015. *Stand-Alone Unit or Mainstreamed Responsibility: How Can Water Utilities Serve Low-Income Communities?* WSUP Discussion Paper #005. London, United Kingdom: Water & Sanitation for the Urban Poor. http://www.wsup.com/wp-content/uploads/2015/02/DP005-Stand-alone-unit-or-mainstreamed-responsibility.pdf.

Peprah, Dorothy, Kelly K. Baker, Christine Moe, Katharine Robb, Nii Wellington, Habib Yakubu, and Clair Null. 2015. "Public Toilets and Their Customers in Low-Income Accra, Ghana." *Environment and Urbanization,* 27 (2): 589–604. doi:10.1177/0956247815595918.

Powell, Bronwyn. 2016. "eDiscussion: CSOs and Market Based Sanitation Approaches." Civil Society Water, Sanitation and Hygiene Fund. http://www.cswashfund.org/learning-events/e-discussion/csos-and-market-based-sanitation-approaches.

Rheinländer, Thilde, Flemming Konradsen, Bernard Keraita, Patrick Apoyab, and Margaret Gyapong. 2015. "Redefining Shared Sanitation." *Bulletin of the World Health Organization,* 93 (7): 509–510. doi:10.2471/blt.14.144980.

Rieck, C., Onyango, P., Werchota, R., Bruebach, K., Green, T., and Bauer, S. 2010. *Case Study of Sustainable Sanitation Projects: Public Toilet with Biogas Plant and Water Kiosk: Naivasha, Kenya.* Sustainable Sanitation Alliance.

Roma, E., C. Buckley, B. Jefferson, and P. Jeffrey. 2010. "Assessing Users' Experience of Shared Sanitation Facilities: A Case Study of Community Ablution Blocks in Durban, South Africa." *Water SA,* 36 (5). doi:10.4314/wsa.v36i5.61992.

Rosie Renouf, R., Rahman, H., Hasan, A., Rahman, N., Mikhael, G., and Drabble, S., 2017. "From Pilot Project to Emerging Sanitation Service: Scaling up an Innovative Public Private Partnership for Citywide Faecal Waste Collection in Dhaka." London, United Kingdom: Water & Sanitation for the Urban Poor.

Ross, Ian, Rebecca Scott, and Ravikumar Joseph. 2016. *Fecal Sludge Management: Diagnostics for Service Delivery in Urban Areas – Case Study in Dhaka Bangladesh.* Washington, DC: World Bank Group.

Rydin, Y., A. Bleahu, M. Davies, J. D. Dávila, S. Friel, G. De Grandis, N. Groce, P. C. Hallal, I. Hamilton, and P. Howden-Chapman. 2012. "Shaping Cities for Health: Complexity and the Planning of Urban Environments in the 21st Century." *The Lancet* 379 (9831): 2079–2108.

Schneider, Keith. 2016. "How Durban Set the Global Standard for Providing Water and Sanitation for the Poor." UrbanAfrica.net, February 12. https://www.urbanafrica.net/news/14812-2/.

Schoutena, M. A. C., and R. W. Mathenge. 2010. "Communal Sanitation Alternatives for Slums: a Case Study of Kibera, Kenya." *Physics and Chemistry of the Earth,* 35 (13-44): 815-22.

Scott, Rebecca, Ian Ross, and Isabel Blackett. 2016. *Fecal Sludge Management: Diagnostics for Service Delivery in Urban Areas. Case Study in Balikpapan, Indonesia.* Washington, DC: World Bank Group.

Sen, Somnath, and Yue Ma. 2005. *Improvement and Maintenance Management of Public Toilets in Liuzhou: A Study*. Washington, DC: World Bank.

Shafi, Salma A., Mehedi, A., Opel, A., and Wa, K. I. 2011. "Making Public Toilets Work – Part II." *Daily Star,* July 16. http://www.thedailystar.net/news-detail-194379.

Shyamal Sarkar, Soma Ghosh Moulik, and Somnath Sen. 2006. *The Mumbai Slum Sanitation Program: Partnering with Slum Communities for Sustainable Sanitation in a Megalopolis.* Bangladesh: Water and Sanitation Program-South Asia and World Bank.

Simiyu, Sheillah, Mark Swilling, Richard Rheingans, and Sandy Cairncross. 2017. "Estimating the Cost and Payment for Sanitation in the Informal Settlements of Kisumu, Kenya: A Cross Sectional Study." *International Journal of Environmental Research and Public Health* 14 (1): E49.

Smith, David. 2014. "Ethiopians' Plight: 'The Toilets Are Unhealthy, but We Don't Have a Choice.'" *The Guardian,* August 28. https://www.theguardian.com/global-development/2014/aug/28/ethiopians-plight-toilets-dirty-no-choice-addis-ababa.

Sommer, Marni, Suzanne Ferron, Sue Cavill, and Sarah House. 2014. "Violence, Gender and WASH: Spurring Action on a Complex, Under-Documented and Sensitive Topic." *Environment and Urbanization,* 27 (1): 105–116. doi:10.1177/0956247814564528.

Strategyzer. n.d. *The Business Model Canvas.* Strategyzer. Accessed September 26, 2017. https://strategyzer.com/canvas/business-model-canvas.

Sugden, Steve. 2012. *Reflections on Business Models and Technology Designs for Pit Emptying Services.* Water for People. http://www.waterfund.go.ke/safisan/Downloads/Business%20Model%20for%20Pit%20Emptiers(1).pdf.

Sustainable Sanitation Alliance. 2018. Shit Flow Diagram http://sfd.susana.org.

Tayler, K., J. Colin, and J. Parkinson. 2000. *Strategic Planning for Municipal Sanitation: A Guide.* London, United Kingdom: GHK Research and Training.

Toubkiss, Jérémie. 2010. *How to Manage Public Toilets and Showers.* Concerted Municipal Strategies. https://www.pseau.org/outils/ouvrages/pdm_ps_eau_cms_guide_n_5_how_to_manage_public_toilets_and_showers_2010.pdf.

Tremolet, Sophie, Goufrane Mansour, and George Muruka. 2015. "Microfinance for Sanitation: What Is Needed to Move to Scale?" *Waterlines,* 34 (3): 227-240. https://www.developmentbookshelf.com/doi/pdf/10.3362/1756-3488.2015.022

Tumwebaze, I. K., C. G. Orach, C. Niwagaba, C. Lüthi, and H. J. Mosler. 2013. "Sanitation Facilities in Kampala Slums, Uganda: Users' Satisfaction and Determinant Factors." *International Journal of Environmental Health Research* 23 (3): 191–204.

Tumwebaze, Innocent K., and Hans-Joachim Mosler. 2014. "Why Clean the Toilet if Others Don't? Using a Social Dilemma Approach to Understand Users of Shared Toilets Collective Cleaning Behaviour in Urban Slums: A Review." *Journal of Water, Sanitation and Hygiene for Development,* 4 (3): 359. doi:10.2166/washdev.2014.152.

Water Services Trust Fund. 2009. *The WSTF Public Sanitation Concept - Document from the Public Sanitation Toolkit (Version 1.0).* Kenya: Water Services Trust Fund.

Water Services Trust Fund. 2011. *Toolkit for Urban Public Sanitation Projects in Kenya (Version 1.0).* Kenya: Water Services Trust Fund.

Wegelin-Schuringa, M., and T. Kodo. 1997. "Tenancy and Sanitation Provision in Informal Settlements in Nairobi: Revisiting the Public Latrine Option." *Environment and Urbanization* 9 (2): 181–90.

World Bank Group. 2016. "Community Slum Sanitation in India: A Practitioner's Guide." New Delhi, India: World Bank. https://openknowledge.worldbank.org/handle/10986/24758. World Bank. 2005. *Understanding Small Scale Providers of Sanitation Services: A Case Study of Kibera.* WSUP field note. Washington, DC: World Bank.

World Bank. 2007. *Public Toilets in Urban India: Doing Business Differently.* WSUP field note. Washington, DC: World Bank.

World Bank. 2009. *Setting Up Pro-Poor Units to Improve Service Delivery: Lessons from Water Utilities in Kenya, Tanzania, Uganda and Zambia.* WSUP field note. Washington, DC: World Bank.

World Bank. 2016. *Project Information Document (PID): Identification/Concept Stage.* Report No. PIDC65394. http://documents.worldbank.org/curated/en/283501474294466590/text/PIDC65394.txt.


GWSP
GLOBAL WATER
SECURITY & SANITATION
PARTNERSHIP


CITYWIDE
INCLUSIVE
SANITATION


WORLD BANK GROUP

W18035