



QUISS staff on a site visit to inspect shared sanitation facilities in the low-income area of Manyatta, located in the city of Kisumu, Kenya (Image: Sandec).

Shared Sanitation in Low-income Urban Settlements

Evidence from Ghana, Kenya and Bangladesh

Key Points

- Shared sanitation can be an adequate sanitation solution provided that quality standards are met.
- Acceptable quality is needed to ensure user acceptance to support the success of sanitation interventions and improve public health.
- Establishing an enabling environment for adequate sanitation service delivery can lead to more equitable sanitation services for all.
- Quality standards for shared sanitation refer to facilities that are:
 - Equipped with flush/pour-flush toilet technology where water is available;
 - Used by up to three households per toilet;
 - Closely located, accessible and available when needed;
 - Providing adequate safety, security and privacy to both genders;
 - Clean and offering functional handwashing stations.

Shared sanitation has immensely contributed to sanitation access in urban areas, but is at best considered a “limited” solution due to the lack of quality standards within Sustainable Development Goal #6.

This policy brief presents the main results of the QUISS project (Quality Indicators of Shared Sanitation), a three-country comparative mixed-methods study that identified the key criteria of what constitutes “acceptable quality” shared toilets in urban low-income contexts and provides recommendations for strengthening the acceptability, functionality and sustainability of shared sanitation facilities.



Collecting gender-specific quality criteria for adequate shared sanitation from a user perspective with residents of low-income urban areas (Images: Sandec).

I. Introduction

In recent years, shared sanitation facilities¹ (SSF) have substantially contributed to sanitation access in low-income urban areas. The global percentage of users has increased from 5.4% in 2000 to 8.3% in 2017 [1]. However, while SSF are often the only viable option in densely populated low-income urban areas, within Sustainable Development Goal (SDG) #6 and the WHO/UNICEF Joint Monitoring Programme (JMP), which evaluates progress on the SDGs, they are only considered to be a “limited” solution [2, 3].

Monitoring sanitation access to quality facilities

Depending on how excreta are managed, *improved* sanitation facilities, which are those designed to hygienically separate excreta from human contact, are divided into three categories: *limited*², *basic*³, and *safely managed*⁴. Private household toilets are categorised as either *basic* or *safely managed* services. In contrast, SSF are at best classified as a *limited* solution because they are shared by more than one household – irrespective of use and how the excreta are managed. The reason is, that “[it is] extremely difficult – for global monitoring purposes – to differentiate between shared toilets that are hygienic, accessible and safe, and the more common ones, which are poorly designed and managed” [4]. There are concerns about their 24/7 accessibility and safety, privacy [5], and the lack of hygiene and cleanliness [6], which can adversely impact health and well-being [7]. The new WHO

guidelines on sanitation and health, which serve as the normative guideline in the design of sanitation programs, state that SSF which “safely contain excreta can be promoted [...] as an incremental step when [private household toilets] are not feasible” [8]. While many SSF are of unacceptable quality, there are no clear criteria to distinguish between unacceptable and acceptable quality [4]. There exists no set of indicators at present for the monitoring and evaluation of the quality of SSF. QUISS identified key criteria of what constitutes “acceptable quality” of SSF in urban low-income contexts, using a mixed methods approach.

II. Main results of the evaluation

QUISS project results comprise quality indicators from a large-scale quantitative assessment as well as qualitatively evaluated criteria from a user perspective including gender differences and particularities. In 2019, 17 focus group discussions, a survey of 3600 HHs and 2026 observational spot-checks of SSF and private household toilets were done in Ghana, Kenya and Bangladesh. A detailed description of QUISS is presented in Schelbert et al. (2020) and Meili et al. (2021) [9, 10].

User perspectives on acceptable sanitation and quality criteria

Users and their perspectives on sanitation priorities are fundamental to consider in order to meet their needs with public investments, ensure user acceptance, and achieve the success of sanitation interventions. To evaluate user perspectives, we used a qualitative approach and analysed 17 focus group discussions, eight of which were women-only, five were mixed and four were men-only. Each had eight to twelve participants between 18–65 years of age [9].

In the first evaluation step, the criteria were determined what users themselves use for “acceptable quality” of adequate sanitation. User quality criteria are those aspects

1 Shared sanitation facility (SSF) is taken to mean any sanitation facility that is used by more than one household, but not facilities the primary purpose of which is to serve a public area (e.g. market or bus station).

2 Limited sanitation = Improved sanitation (facilities designed to hygienically separate excreta from human contact) that is shared by two or more households.

3 Basic sanitation = Improved facilities not shared with other households.

4 Safely managed services = Improved facilities not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite.

that affect the user's experience in a positive or negative way when using or avoiding to use SSF. This includes factors that make an experience (in-)convenient or (dis-)comforting or that lead to adverse or beneficial health or well-being effects. User quality criteria are factors that have been consistently mentioned across genders and context, i.e. which were discussed in at least two different types of focus group discussions in every country (= *threshold criteria*). In the second evaluation step, because women and men have different hygiene practices and needs, gender differences regarding the user quality criteria were defined. Nine user quality priorities were identified in the three countries (Table 1). In descending priority based on their score, the SSF quality priorities from a user perspective are:

1. Water availability in close proximity
2. Cleanliness
3. A gender-separated toilet
4. Flush WC
5. Lighting
6. A lockable/functional door
7. Tiling
8. A handwashing station
9. Privacy

A gender-lens on acceptable sanitation and quality criteria

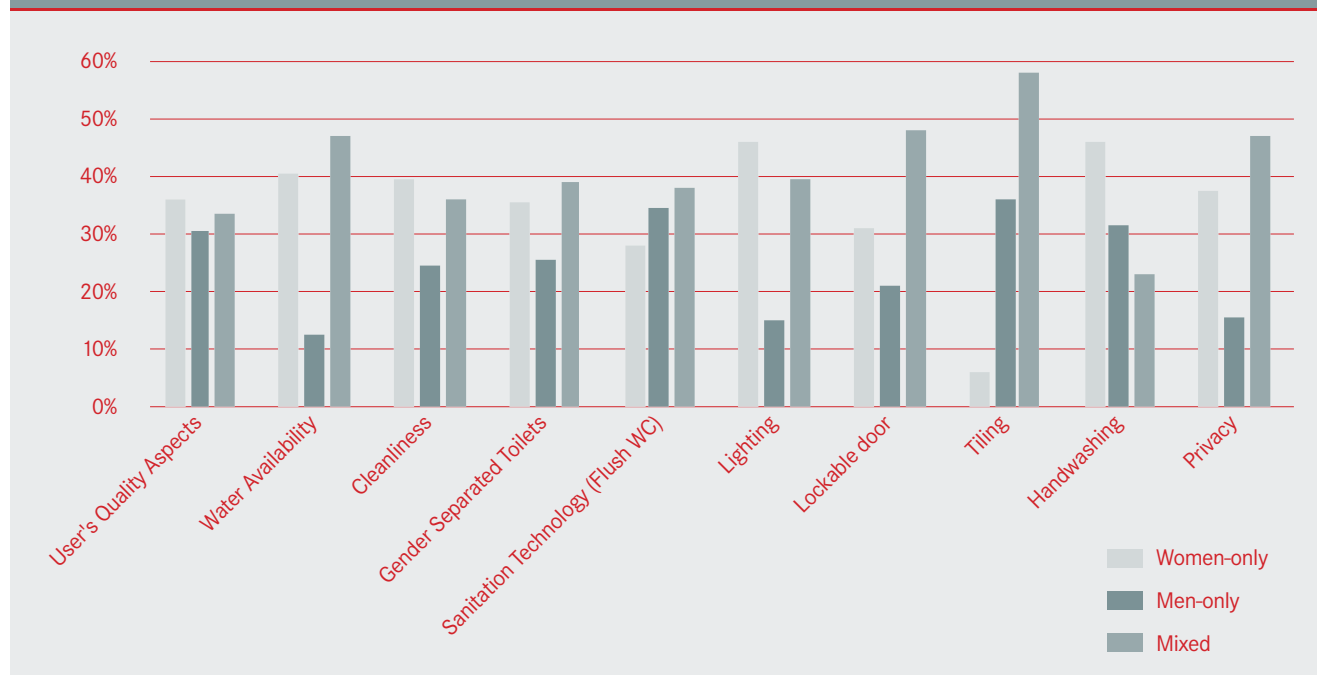
Women expressed a higher concern for almost all the quality criteria, except for two (flush technology and tiling). Women prioritised lighting and a lockable/functional door for privacy and safety/security reasons. Men prioritised lighting and tiling for cleanliness reasons. Focus group participants mentioned tiling as a preference because they expect toilets to have easily cleanable surfaces to decrease the effort needed for cleaning. They also believe that this increases the likelihood of the users to clean the SSF. Regarding gender-separate toilets, women preferred the enhanced privacy that they offer, whereas men prefer them for cleanliness reasons. Women feel safer having a private toilet cubicle reserved for them, while men complained about visible blood-stains. The latter indicates inadequate or the lack of menstrual health management provisions.

In addition, the insufficient number of toilets (= "toilet-user ratio") leads to queuing and increased waiting times, impedes toilet availability and has adverse effects on privacy, safety/security, and cleanliness. Long waiting times also occur where toilets simultaneously serve as a shower/bathing area, and as places for women to

Table 1: **Quality criteria from a user perspective (distribution binarised).**

Quality Aspects User View	Ghana			Kenya			Bangladesh		
	Women-only	Men-only	Mixed	Women-only	Men-only	Mixed	Women-only	Men-only	Mixed
Water Availability	✓	x	✓	✓	✓	✓	✓	✓	✓
Cleanliness	✓	✓	✓	✓	✓	x	✓	✓	✓
Gender Separated Toilets	✓	✓	✓	✓	✓	x	✓	✓	✓
Sanitation Technology (Flush WC)	✓	✓	✓	✓	✓	✓	✓	x	✓
Lighting	✓	x	✓	✓	✓	✓	✓	x	✓
Lockable door	✓	x	✓	✓	✓	✓	✓	✓	✓
Tiling	✓	✓	✓	x	✓	✓	✓	x	✓
Handwashing	✓	x	✓	x	✓	✓	✓	✓	✓
Privacy	✓	x	✓	✓	✓	✓	✓	x	✓
<i>Evaluation Criteria Threshold</i>									
No Odour / Smell	✓	✓	✓	✓	x	✓	x	x	✓
Cleaning Arrangement	✓	✓	✓	✓	x	x	✓	✓	✓
Space Availability (inside)	x	✓	x	✓	x	✓	✓	✓	✓
Safety / Security	✓	x	✓	✓	✓	x	✓	x	x
Toilet-User-Ratio (number of users)	✓	x	x	✓	✓	✓	✓	✓	x
Detergent	✓	x	✓	x	x	x	✓	✓	✓
No Vermin / Insects	✓	x	x	✓	✓	x	✓	x	x
Queuing / Waiting Time	✓	x	x	✓	✓	x	✓	✓	✓
Tissue / Toilet Paper	✓	x	x	✓	✓	x	✓	✓	✓

Figure 1: User quality criteria by gender (distribution normalised).



manage their menstrual health. Gender-separate toilets and – where possible – designated shower/bathing areas could enhance user privacy and increase toilet availability. Inadequate conditions force users to develop coping mechanisms, which women develop sooner than men. The most prevalent coping mechanism for women is accompanying each other to the toilet either because it is too far away or when using it at night. This links to the importance of

lighting, which is especially relevant to women when using SSF at night.

Indicators for assessing and monitoring SSF quality

In the second phase, the current quality standards and monitoring guidelines (JMP sanitation service levels) were investigated to ascertain whether they adequately reflect the situation on the ground and if other/additional infor-

Table 2: The Sanitation Quality Index (SQI), its constituting observable outcome variables and indicators and respective results.

Outcome Measure	Quality Dimensions	Quality Variables	Percentage (N=2026)
SQI	Hygiene	1. No solid waste inside the cubicle.	68%
		2. No visible faeces in or around the manhole/pan.	78%
		3. No insects inside the cubicle.	57%
		4. Available handwashing facility with soap.	11%
		5. Not clogged in the case of a flush toilet or not full in the case of a pit.	84%
	Safety	6. Solid roof (without holes): The roof protects the user from external (environmental) factors such as rain.	79%
		7. Solid floor (without cracks/holes): The floor separates the user from excreta and is, therefore, a gatekeeper for health hazards through both direct contact and indirect contact, e.g., insects.	91%
	Privacy	8. Solid wall: The wall must be of solid material and have no holes that would allow a person to peek through.	89%



Conducting household surveys in Dhaka, Bangladesh (Image: Sandec).



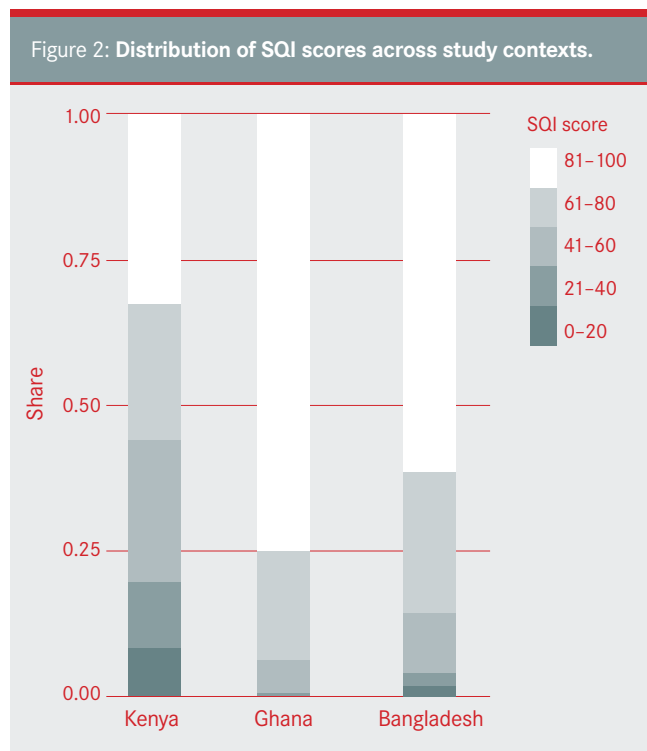
Inspecting shared sanitation facilities in Kisumu, Kenya (Image: Sandec).

mative indicators could increase the explanatory power of urban sanitation quality assessments, particularly concerning SSF. A survey of 3600 HHs and 2026 observational spot-checks of SSF and private household toilets were done, using a combination of systematic and purposive sampling [10].

To identify potential indicators to measure urban sanitation quality, the Sanitation Quality Index (SQI) was developed. It comprises three quality dimensions: the hygiene, safety, and privacy of sanitation facilities. Variables for each quality dimension were identified based on user priorities [9] and the WHO guidelines on sanitation and health [8]. In addition, we only included observable indicators due to validity and reliability concerns of reported household data [10].

The empirical approach followed three steps. First, the SQI was aggregated based on the three dimensions and eight variables (Table 2). Second, the relationship between the SQI as a proxy for toilet quality, currently used sanitation indicators (e.g. technology and sharing), and additional variables⁵ were analysed, using regression analysis (Figure 3). The findings were incorporated into the current JMP framework to determine the implications of new quality indicators for the sanitation service ladder.

The distribution of SQI scores varies considerably across study contexts. On average, the toilets in Kenya have the lowest SQI scores out of all three countries. 40% of the toilets in Kenya have a SQI score of 60 or below. In Ghana, less than 6% of the toilets have SQI scores of 60 and below, and in Bangladesh, approximately 12% fall below a score of 60.



Descriptive statistics from the household survey and the toilet spot-checks reveal that the majority of the toilets (65%) observed were improved, of which 37% were connected to a sewer/septic tank and 63% were improved pit latrines (with slab). Among the households interviewed, 93% shared their toilet with at least one other household. The majority (96%) of the toilet facilities were located on the compound, and most had solid walls (89%), roofs (79%) and floors (91%) without holes. Although two thirds had an improved water source onsite (68%), only 11% of the toilets had a handwashing facility with soap available. 67% had a door that was lockable from the in- and outside and 40% of the facilities provided functional lighting. Conversely, only 3% of the toilets were gender-separated. There were resident

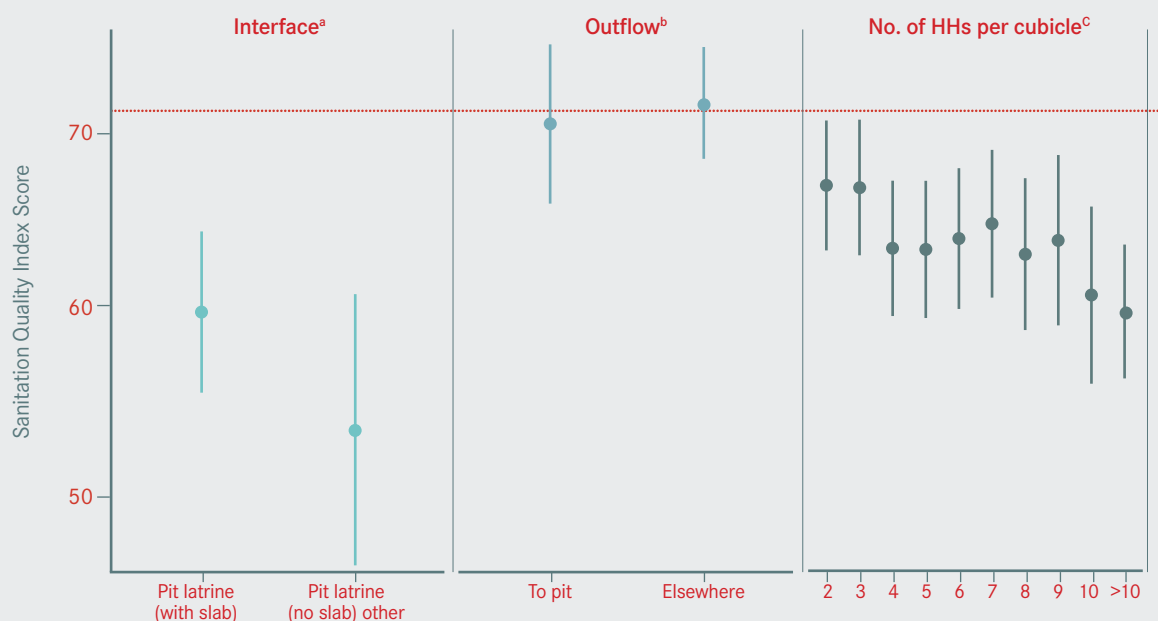
⁵ The additional variables were: the toilet’s location, water on the premises, a handwashing facility with soap, functional lighting, a lockable door, floor tiling, gender-separate cubicles, a cleaning arrangement, the degree of user relationship, the toilet’s age, the landlord living on the same plot, and a bin inside the toilet cubicle.

landlords on half of the compounds (52%) and 43% of the respondents reported that there was a cleaning arrangement in place. Based on observable indicators, only 41% were categorised as clean (= no visible faeces, no insects, and no solid waste).

Regression analysis was used to test the relationship between the observable SQI and the quality indicators, as shown in Figure 3. It shows the average SQI scores for a particular technology type and/or a cubicle with a certain number of users, relative to the average SQI scores of *flush/pour-flush toilets to piped sewer/septic tank* used by one household (dotted line). The results suggest that relying on *improved technologies* (i.e. at least a *pit latrine with slab*) as a single distinguishing indicator for toilet quality is inadequate in urban settings – even for private household toilets. SQI scores of *pit latrines with slab* are significantly lower compared to *flush toilets*, even though both types are considered *improved technologies*. In other words, our results suggest that relying on *improved technologies* (i.e. at least a pit latrine with slab) as a single distinguishing indicator for toilet quality is inadequate in urban settings – even for private household toilets. In addition, SQI scores of *pit latrines with slab* are lower

compared to *flush toilets*, even though both types are *improved technologies*. Therefore, classifying *pit latrines with a slab* as *unimproved* sanitation improves the prediction of sanitation quality as defined by the SQI. Regarding *sharing*, toilets shared by two to three HHs are mostly cleaner, safer and more private than toilets shared by four or more HHs. However, the relationship between the SQI score and the number of sharing HHs is not linear and varies considerably across countries (see [11–13]). Other strongly significant indicators included the toilet's *location, lighting, and a lockable door* (from the in- and outside). Further, the presence of a *cleaning rota* and *floor tiling* display a moderate positive correlation. The availability of water on the premises, gender-separate cubicles, the sharing users' relationships, the toilet facility's age, and a landlord living on the same plot did not significantly correlate with toilet quality.

Figure 3: Correlations between toilet technology, number of toilet users, and toilet quality (SQI).



Notes: Estimates show average SQI scores (0–100) conditional on control variables: location, water on premises, handwashing facility w/ soap, lighting, lockable door, tiling, gender-separated cubicle, cleaning arrangement, user relationship, age of toilet, landlord on plot, and bin inside cubicle; Errorbars represent 95%–CIs, with cluster-robust standard errors; the dotted line shows the unconditional SQI mean;
a Ref: flush/pour-flush. "Other" includes all types of unimproved toilet technology;
b Ref: to piped sewer/septic tank. "Elsewhere" includes toilets draining to "do not know where". Outflow refers to any containment/conveyance system;
c Ref: 1 household.

III. Main recommendations

Based on the results, users prefer facilities that are available and accessible, safe and secure, private and hygienic. In the light of these findings, we suggest that the JMP sanitation service levels be reviewed to increase the sanitation service ladder's informative and explanatory power of quality for urban sanitation, particularly for shared sanitation facilities in urban low-income settings.

Recommendation 1	Requirements
<p><u>Acknowledge shared sanitation as adequate (intermediate) sanitation solution.</u></p> <p><i>Include shared sanitation as a basic sanitation solution for low-income urban settings provided quality standards are met.</i></p>	<ul style="list-style-type: none"> • Ensure that national legal and regulative framework, guidelines and bylaws and institutional and financial arrangements are explicit on shared sanitation; • Enable contextualised solutions for shared facilities, for example in low-income areas; • Conduct education and sensitisation campaigns in communities to ensure that the quality standards for shared sanitation are the same as those for private household toilet facilities; • Enhance stakeholder involvement and augment collaboration among the various stakeholders to support the establishment and maintenance of these standards. This includes improving relationships between landlords and tenants to enhance self-organisation and collective action among tenants; • Encourage landlords to construct sanitation facilities that are easy to clean.
Recommendation 2	Requirements
<p><u>Establish and apply (contextualised) quality indicators tailored to SSF.</u></p> <p><i>Establish quality standards and enable monitoring to ensure user acceptance to support the success of sanitation interventions to improve public health.</i></p>	<ul style="list-style-type: none"> • Establish the following indicators to determine adequate quality (defined as available and accessible, safe and secure, private and hygienic): <ul style="list-style-type: none"> – Technology: Flush or pour-flush toilet technology where water is available and, if not available, construct improved toilets; – Numbers of users: Up to three households per facility; – Accessibility/Availability: Toilet located inside dwelling/inside compound/on plot, no restrictions of use, e.g. reported use 24/7, including at night; – Safety/Security: Solid floor and superstructure without cracks/holes, and functional lighting; – Adequate privacy: Availability of gender-separate toilets (whenever multiple cubicles are feasible/available), and lockable/functional doors; – Acceptable cleanliness; No solid waste, no visible faeces/blood stains/sputum, no insects; – Offer functional handwashing stations (soap and water). • Define additional contextualised standards for acceptable shared sanitation together with the local community since contextualised indicators provide better data for the measurement of targets, the highlighting of gaps, and the setting of sanitation priorities; • Monitor and evaluate progress, quality and sustainability to promote standards and support enforcement.

SSF can be considered a basic sanitation solution for low-income areas provided that quality standards are met. Accordingly, this policy brief recommends a reclassification of the sanitation ladder based on quality indicators tailored to SSF. Overall, shared facilities fit with the citywide inclusive sanitation (CWIS) approach. Adequate sanitation service provision requires the presence of an enabling environment and the successful interlinkage of elements at different levels.

Recommendation 3	Requirements
<p><u>Adopt an approach aligned with citywide inclusive sanitation (CWIS) principles.</u></p> <p><i>Aim at safely managed sanitation access for everyone, specifically targeting unserved and under-served groups.</i></p>	<ul style="list-style-type: none"> • Full consideration of the entire sanitation service chain, including resource recovery options; • Integrate complementary urban services, including water supply, drainage, greywater management and solid waste management; • Use a range of technical solutions, designed and implemented through an adaptive and incremental approach; • Establish strong institutions with clear roles and responsibilities; • Plan with secure budgets for both capital and operational expenses and allocate funding for non-infrastructure aspects of service delivery, such as capacity building, household engagement and outreach, and sanitation marketing.

Recommendation 4

Establish an enabling environment for adequate sanitation service delivery.

Develop legislative and regulative frameworks that clearly define and assign roles and responsibilities.

Requirements

- Develop a national legal and regulative framework that streamlines policies guiding sanitation at the national level, which feed into the policies at the county government level;
- Establish government support and develop national guidelines and bylaws that embrace essential standards and indicators;
- Clearly define and assign the roles and responsibilities of state and non-state actors to enhance collaboration leaders/representatives;
- Include financial arrangements that provide strategic directions for ensuring cross-subsidy between poor and non-poor users for sharing capital and operational costs;
- Include enforcing mechanisms to promote and enforce standards.

References

- [1] WHO, *WHO/UNICEF JMP global WASH database*. 2020.
- [2] Cardone, R., A. Schrecongost, and R. Gilsdorf, *Shared and Public Toilets: Championing Delivery Models That Work*. 2018, World Bank.
- [3] Tidwell, J.B., et al., *Understanding demand for higher quality sanitation in peri-urban Lusaka, Zambia through stated and revealed preference analysis*. *Social Science & Medicine*, 2019. **232**: p. 139–147.
- [4] Evans, B., et al., *Limited services? The role of shared sanitation in the 2030 Agenda for Sustainable Development*. *Journal of Water, Sanitation and Hygiene for Development*, 2017. **7**(3): p. 349–351.
- [5] WHO, *Water, sanitation, hygiene and health: a primer for health professionals*. 2019, World Health Organization.
- [6] Günther, I., et al., *When is shared sanitation improved sanitation*. The correlation between number of users and toilet hygiene, 2012.
- [7] Heijnen, M., et al., *Shared sanitation versus individual household latrines in urban slums: a cross-sectional study in Orissa, India*. *The American journal of tropical medicine and hygiene*, 2015. **93**(2): p. 263–268.
- [8] WHO, *Guidelines on sanitation and health*. 2018.
- [9] Schelbert, V., et al., *When is shared sanitation acceptable in low-income urban settlements? A user perspective on shared sanitation quality in Kumasi, Kisumu and Dhaka*. *Journal of Water, Sanitation and Hygiene for Development*, 2020. **10**(4): p. 959–968.
- [10] Meili, D., et al., *Indicators for sanitation quality in low-income urban settlements: Evidence from Kenya, Ghana, and Bangladesh*. (submitted). 2021.
- [11] Alam, M.-U., et al., *Shared Sanitation in Low-income Urban Settlements in Bangladesh*. Research for policy, 2021.
- [12] Simiyu, S., et al., *Shared Sanitation in Low-income Urban Settlements in Kenya*. Research for policy, 2021.
- [13] Antwi-Agyei, P., et al., *Shared Sanitation in Low-income Urban Settlements in Ghana*. Research for policy, 2021.

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About QUISS

QUISS was commissioned by Water & Sanitation for the Urban Poor (WSUP) under the Urban Sanitation Research Initiative, funded by UK Aid from the British People. Based on an extensive survey of shared toilets and their users across cities in Bangladesh, Ghana and Kenya, as well as qualitative studies, it aimed to identify key criteria of what constitutes “high quality” shared toilets in low-income urban contexts.



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