

## Research Paper

# Factors and impacts of informal settlements residents' sanitation practices on access and sustainability of sanitation services in the policy context of Free Basic Sanitation

Christophe Muanda, Jacqueline Goldin and Rainer Haldenwang

### ABSTRACT

Through the Free Basic Sanitation (FBSan) service policy, many informal settlements in South Africa have been provided with basic sanitation facilities. However, access to these facilities remains challenging for many residents. These challenges have compelled residents to adopt a range of alternative sanitation practices. Through interviews, observation and focus group discussions in five informal settlements in the Western Cape, South Africa, 383 randomly selected respondents identified factors that shape their sanitation practices and how these practices impact on access to, and sustainability of sanitation services in the policy context of the FBSan. Residents' sanitation practices include the use of buckets, porta-potties, plastic bags, and existing facilities within and outside their settlements for either defecating or discharging the bucket contents and open defecation. These sanitation practices are informed by factors including safety concerns, poor conditions of the facilities, lack of privacy and choice. These findings suggest that the provision of facilities through the FBSan policy should consider the multiple and varied needs of residents, practices and conditions of their settlements prior to the selection and deployment of facilities to informal settlements in South Africa.

**Key words** | Free Basic Sanitation, informal settlement, sanitation practices, sanitation services, Western Cape

### INTRODUCTION

Access to safe sanitation is a growing challenge in informal settlements where over 65.0% of the residents have inadequate sanitation (UN-Habitat 2014), and this has been identified as one of the biggest social issues of post-apartheid South Africa (DWS 2016). Since access to sanitation (understood in this paper as the ability – and the right – to enter and to use the toilets at the time of need) is recognized as a human right in South Africa, all informal settlements are

to be provided with basic infrastructure including water and sanitation facilities free of charge. Municipalities are responsible for the operation and maintenance of the facilities. Available sanitation facilities include communal flush toilets, MobiSan (a mobile communal urine diversion toilet), Kayaloo (a mobile communal full flush toilet) and porta-potties (individual portable toilet). However, most of these facilities are not fully accessible due to various operational issues (e.g. blockage and lack of water for flushing). Recognizing that sanitation is dignity, the Free Basic Sanitation (FBSan) policy that provides the right to limited water and sanitation services at no cost to

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low-income households (Mosdell 2006) was introduced in 2001. The FBSan policy is a supply-driven approach with the focus on infrastructure delivery (Tissington 2011), especially in rural and informal settlements. Although being acclaimed worldwide as one of the most progressive policies, the FBSan did not provide specifications regarding the nature of the services to be provided (Mjoli *et al.* 2009). Municipalities (as service providers) were mandated to decide on the level of service and related allocations based upon their available resources and local circumstances (DWA 2008; Mjoli 2010). Municipalities focused on the supply of facilities based on either the availability of funds or the availability of the technology without considering site conditions, residents' socio-cultural preferences or sanitation practices and needs (Lagardien & Muanda 2014). Through the FBSan policy, municipalities supplied sanitation facilities to various areas with the greatest need including informal settlements across South Africa. As a result, sanitation backlogs were reduced from 52% in 1994 to 21% in 2010 (Mjoli *et al.* 2009; Mjoli 2010; DPME DWA & DHS 2012). To date, 76% of South African population living in urban and peri-urban areas has access to basic sanitation (WHO & UNICEF 2019).

While most informal settlements in South Africa have basic water, and sanitation infrastructure defined as follows by DWS (2016): 'a sanitation facility that is safe, reliable, environmentally sound, easy to keep clean, provides privacy, provides protection against the weather, well ventilated, keeps smells to a minimum, prevents the entry and exit of flies and other disease-carrying pests, enables safe and appropriate treatment and/or removal of human waste' residents are facing challenges pertaining to their use (Mels *et al.* 2009; Taing 2015; Pan *et al.* 2018). Challenges are generally viewed from social, technical, institutional and educational perspectives (Phaswana-Mafuya 2006) and relate to the appropriateness of sanitation technologies provided and the context of use patterns (Lagardien & Muanda 2014). The lack of, or inadequate access to, improved sanitation facilities and poor hygiene practices has been flagged amongst the contributing factors to high incidences of sanitation and hygiene-related mortality and morbidity (WHO 2009). It has compelled people to resort to their own means of accessing sanitation such as open defecation, flying toilets or plastic bags and the use of buckets (Taing 2015; Winter *et al.* 2018). In India, McFarlane

(2008) observed that women preferred to defecate in open spaces rather than using untidy toilets. In South Africa, Uganda and Kenya, communal facilities are not used at night because of perceived safety concerns (Lagardien *et al.* 2012; Tumwebaze *et al.* 2013; Simiyu 2017) and users prefer buckets, plastic or other alternatives instead (Taing 2015). Children in informal settlements may practice open defecation even in settlements well served with improved sanitation facilities (Mulenga *et al.* 2004). These practices are justified by a general belief that children's excreta are not as harmful as that of adults (Mulenga *et al.* 2004; Kwiringira *et al.* 2014). Even though the sanitation facility is closer to the household, secured and in good working conditions, some residents are reluctant to access or use the facility appropriately (Mulenga *et al.* 2004; Lagardien *et al.* 2012). Very often, service providers have little or no knowledge of the existing sanitation practices of the communities for whom they have responsibilities (Lagardien & Muanda 2014; Pan *et al.* 2018). This lack of knowledge and an engrained supply rather than demand model of service may explain why service providers deliver sanitation services and facilities that are not responding to residents' needs or settlement conditions (Kwiringira *et al.* 2014; Lagardien & Muanda 2014).

There are very few studies that have explored factors specifically associated with informal settlement residents' sanitation practices in the context of the FBSan policy using both quantitative and qualitative methods. Many studies that have addressed the shortfalls of the FBSan policy have put their focus on quantifying the number of issues, including technology choice, community participation and equity. Thus, commonly, it has been quantitative methods that have been used to provide measurements of sanitation coverage in terms of the number of facilities supplied. This gap (factors associated with informal settlements residents' sanitation practice in the context of the FBSan using both qualitative and quantitative methods) in the literature needs to be addressed not only because of the critically poor sanitation conditions in informal settlements but also because of the extreme vulnerability of their residents that has not been captured in qualitative studies. Our findings provide important insights for policy-makers by presenting additional less tangible factors that should be considered when the FBSan services are to be deployed. In so doing, it considers the impact that the

supply-driven paradigm that has been adopted to address sanitation backlogs is having on residents where these facilities have been provided. With this information, it will be possible to address the complex set of issues that arise when endeavoring to eradicate the sanitation backlog within the context of informal settlements in general and in particular in the Western Cape.

## METHODS

This study was conducted from October 2017 to June 2018 in five informal settlements in three municipal jurisdictional areas in the Western Cape Province, South Africa, where there are high levels of unemployment, poor levels of education and income, and lack of, or poor, sanitation facilities. These settlements have high population densities and a mixed population of various racial and ethnic groups (Table 1). Dwellings are located either on private or state-owned land. The municipalities have provided different sanitation technologies in each area.

Both quantitative and qualitative approaches were used to collect data (Creswell & Clark 2007) so as to triangulate evidence from multiple perspectives. Purposive sampling methods were applied to select key informants including five community leaders, five cleaners and a caretaker operating in the study areas. A random sampling method was then used to select 383 residents aged 18 years and above. The selected respondents had various levels of education, religious beliefs, origins and social/ethnic groups and had adopted one or more of the sanitation practices. Sanitation practice in the context of this study refers to the mean or place of defecation, and/or the way individuals manage human excreta (urine and feces). Data collection methods included both primary and secondary sources using various tools including a survey, semi-structured interview schedule, focus group discussions (FGDs), participant observation, transect walks and literature review. The quantitative survey was critical in order to collect information on demographic characteristics of the settlements, type of sanitation that is currently being used by the household, sanitation practices and the reasons for their adoption. In order to capture the lived experience of the respondents, the quantitative survey instrument was used as a guide to develop qualitative

tools (Johnson & Onwuegbuzie 2004), including the interview schedule used for the focus groups and face-to-face interviews, the participant observation checklist and transect walk route. Transect walks were conducted through seven identified routes and used to observe and informally question respondents about reported practices and issues. Observation was conducted throughout the day from 4h00 when the toilets open to 22h00 over four consecutive days in each of the five settlements. The eight characteristics observed were (i) the availability of sanitation facilities, (ii) whether the facility was used and use patterns, (iii) the condition of the facility (e.g. cleanliness, smell and functionality), (iv) whether the facility ensures basic privacy, (v) whether the facility is maintained, (vi) availability of other infrastructure (e.g. water, stormwater and solid waste), (vii) sanitation practices, (viii) any other observable issue related to access, use or functioning of the facility. A total of four FGDs were conducted in each informal settlement to interrogate the findings or/and to provide additional information. Respondents were encouraged to express their views and emerging topics were further discussed to obtain a more in-depth understanding of the everyday experience of residents regarding their sanitation practices. This qualitative aspect of the research validated some of the figures that were emerging from the questionnaire and added value by providing in-depth understanding of factors associated with sanitation practices and reasons for their adoption or lack thereof. Municipal and census documents were reviewed to compliment data collected from multiple sources.

Prior to the data collection, respondents were informed of the aims of the study and the confidentiality of information that they would be providing. Respondents were also informed of their right to agree, disagree or withdraw from participating at any stage, as well as the voluntary nature of their participation. Once this information was clear, respondents were then asked to give voluntarily verbal or written consent for the interviews, subsequent recordings and participant observations. Interviews and FGDs were conducted in English and/or the vernacular where preferred. Data were verified and categorized and subsequently coded to identify contrasts and similarities. The coding was done in accordance with Braun & Clarke's (2006) six-step approach to analyze data. The coding was performed by reading data, generating and inserting initial (numerical) codes into the transcripts.

**Table 1** | Profile of case study informal settlements

	Case study informal settlement				
	A	B	C	D	E
Approximate population <sup>a</sup>	600	9,000	3,000	8,000	5,500
Density	High	High	Medium	High	Medium
Settlement land status	Private	Municipal-owned	Municipal-owned	State-owned	State-owned
Predominant ethnic group	Colored	Xhosa	Xhosa	Xhosa	Xhosa and Suthu
Predominant religion	Muslim	Christian	Christian	Christian	Christian
Sanitation technology	Non-waterborne	Waterborne	Waterborne	Waterborne	Waterborne
Category of facility	MobiSan (mobile)	Ablution block (permanent)	Ablution block (permanent)	Kayaloo (mobile)	Ablution block and Kayaloo
Facility type	Communal	Communal	Communal	Communal	Communal
Year of provision <sup>b</sup>	2009	2004 and 2016	2007 and 2017	2004 and 2012	2008 and 2018
Use patterns	Separate	Mixed	Mixed	Mixed	Mixed
Management arrangement	Caretaker	Janitor	Janitor	Cleaner	None
Municipal location	Cape Town East	Cape Town South	Cape Town North	Stellenbosch	Theewaterskloof

<sup>a</sup>Information obtained from community leaders based on the latest local house count.

<sup>b</sup>Second year indicates the upgrading or addition of new facilities.

Thereafter, codes were grouped into potential themes that emerged. The identified themes were defined, refined and named. The selected themes were analyzed and formed the basis for the discussion and observations made in this paper. Ethical clearance (approval dated October 2017) was obtained from the Cape Peninsula University of Technology's Faculty of Engineering and the Built Environment ethics committee.

## RESULTS

Results are presented in two sections: (i) sanitation practices and their extent and (ii) factors informing sanitation practices and impact of residents' practices on the sanitation facilities and sustainability of the service.

### Sanitation practices and their extent

Despite the availability of sanitation facilities, everyday access to sanitation was not constant across time of day

and location in informal settlements. The most used facility was the communal flush toilet (37.9%  $n = 145$ ), Kayaloo (20.0%  $n = 77$ ), MobiSan (12.0%  $n = 46$ ), porta-potties (3.4%  $n = 13$ ) and other facilities including those within or outside the settlements (14.4%  $n = 55$ ). Some respondents (12.3%  $n = 47$ ) reported not using any of the facilities. In all these settlements, the use of existing facilities (either to dispose the bucket content or defecate) is combined with a variety of alternative practices including open defecation, use of plastic bags (commonly known as flying toilet), night pails, porta-potties (Figure 1) and use of own self-made facilities such as pit latrines and flush toilets illegally connected to stormwater drains.

Sanitation practices varied across the sites and were distinguished as being either day (Table 2) or night practices.

Results reported in this table cover only day practices. Night pails are often used at night due to perceived security concerns.

Night practices included the use of bucket, plastic bags and open defecation which were reported and then validated



**Figure 1** | Porta-potties (a), night pail (b), MobiSan (c) and Kayaloo (d).

**Table 2** | Self-reported and observed sanitation practices across case study informal settlements

Sanitation practices (means of defecation or excreta disposal)	Informal settlement					$\Sigma$ n (%)
	A n (%)	B n (%)	C n (%)	D n (%)	E n (%)	
Use of provided facilities	46 (64.8)	56 (8)	58 (76.3)	65 (79.3)	52 (61.9)	277 (72.3)
Use of night pail (bucket)	6 (8.5)	5 (7.2)	7 (9.2)	6 (7.3)	12 (14.3)	36 (9.4)
Use of porta-potties	12 (16.9)	0 (0.0)	2 (2.6)	0 (0.0)	0 (0.0)	14 (3.7)
Use of offsite facilities	1 (1.4)	4 (5.7)	5 (6.6)	7 (8.5)	8 (9.5)	25 (6.6)
Open defecation	4 (5.6)	3 (4.3)	2 (2.6)	2 (2.5)	7 (8.3)	18 (4.7)
Use of plastic bags	1 (1.4)	1 (1.4)	1 (1.35)	1 (1.2)	3 (3.6)	7 (1.7)
Unknown	1 (1.4)	1 (1.4)	1 (1.35)	1 (1.2)	2 (2.4)	6 (1.6)
Total	71 (100)	70 (100)	76 (100)	82 (100)	84 (100)	383 (100)

through observation. These practices occurred after the sun set and up to the early hours of the morning. The most predominant of these practices (at night) was the use of night pails (90.0%  $n = 345$ ) and porta-potties (65.0%  $n = 249$ ). The use of the porta-potties or buckets was subject to their availability. Where the porta-potties were provided, there was less use of buckets. Other reported night practices include open defecation (18.0%  $n = 69$ ), use of plastic bags (38.0%  $n = 146$ ) and use of provided facilities (2.0%  $n = 8$ ). The night use of the provided facilities and use of plastic bags was predominantly practiced by male respondents (aged between 18 and 45), while the use of buckets or porta-potties was predominantly practiced by children, female, elderly and physically challenged residents. Open defecation (at night)

occurred mainly in-between and behind shacks and open spaces, and occurred in the early hours of the morning and during evenings when it is becoming dark as well as after hours when the facility is closed (e.g. settlement A). Open defecation is practiced by children, drunk persons and those against sharing sanitation facilities with people who do not share their same beliefs and those suspicious of being bewitched if they shared facilities with other residents.

*'Open defecation is practiced by almost everyone especially children, drunk people and some adults (males and females). It takes place in open spaces, bushes, and in-between and behind shacks.'* (Community leader of informal settlement A)



Day practices include the use of available facilities to either defecate or discard the bucket content, use of self-made facilities, use of buckets or porta-potties, plastic bags and open defecation (in the nearby bushes, and in, behind or between shacks, behind the existing facilities, unoccupied or disused shacks). These practices occurred during the day time across all five study areas. The difference between the night and day practices is that in some instances, individuals have a choice, whilst in other cases, they do not. Where there is a choice of facility, the use is informed by the attitude of individuals, local conditions, availability of the facility at time of needs and the context in which the resident lives. Some residents maintain their preferred practices even though there might be a clean and safe facility close to their homes.

*'I'm not comfortable using these toilets because of being used by lot of people and not properly cleaned.'* (Resident of informal settlement C)

The extent of these practices varies from one area to another and was dependent on the time of the day, the availability of facilities and/or their condition. The day use of buckets, open defecation and use of plastic bags was more common in informal settlements where most of the facilities were dysfunctional.

*'Since most of the toilets are either malfunctioning or being privatised by certain users, those who don't have access, use buckets or plastic bags that are often discarded anywhere.'* (Community leader of informal settlement E)

These reported practices are adopted by almost every resident including children, adults, elderly and physically challenged people. Many users (89.0%  $n = 341$ ) including those who do not use the provided facilities recognized that their sanitation practices are unhygienic. For many respondents (82.8%  $n = 317$ ), these practices have brought shame, feelings of being neglected and of being undignified as well as feelings of desperation and of discomfort:

*'It is unhuman and even shameful when you have to defecate in the open ... we are being considered like slaves who have no right.'* (Resident of informal settlement A)

Respondents also felt that these practices are the leading causes of contamination and diseases. Some of these practices (e.g. open defecation and use of plastic bags) also cause negative environmental impacts, polluting and contaminating water resources.

### Factors informing sanitation practices

Respondents concurred that their sanitation practices have been informed by a range of context-dependent factors (Figure 2). Safety concerns (fear of being robbed, raped or killed) emerge in all study settlements as a prime factor for the adoption of particular sanitation practices. The lack of lighting in and outside the facility and night walking to the facility is a safety concern:

*'Thugs are waiting in the dark to rob people ... what is the point of going somewhere where you know that you will be a victim?'* (Resident of informal settlement B)

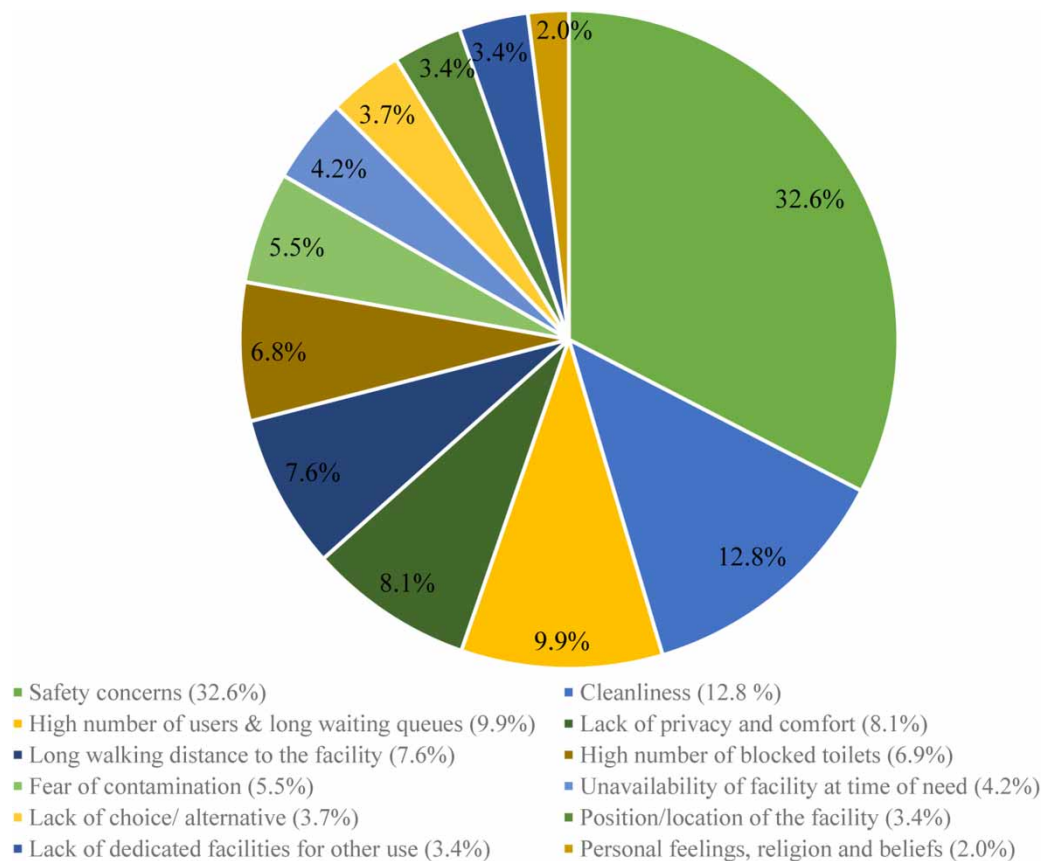
It is noteworthy that during the transect walks two incidences of robbery, two assaults, one harassment and one verbal abuse were witnessed during off-peak and evening time. During our research two deaths, both related to the night access to sanitation were reported. These incidences sparked a wave of panic that deterred many users from using these facilities at night.

Cleanliness of the facility also determined access and use of the facility. Across four of the five study areas, facilities were dirty within a couple of hours after the caretakers, cleaners or janitors had cleaned them. The facilities were especially dirty at weekends and public holidays when cleaners were off duty:

*'These toilets are always dirty and unusable ... so I prefer using something else as using these toilets may cause sickness.'* (Resident of informal settlement E)

The demand for sanitation facilities exceeded supply at peak times (5h00 and 9h00) as there were few facilities available to use. The recommended ratio for use is 1:5 toilets per household (CoCT 2014), but this is not the case:

*'Because of the large number of users and long waiting, using my bucket is more safe because of the unhygienic'*



**Figure 2** | Self-reported reasons for adopting sanitation practices within the study area.

*conditions of the toilet after being used by many people.*  
(Resident of informal settlement B)

Despite the availability of sanitation facilities, only few were functioning due to inadequate maintenance, theft, misuse and vandalism. Some of the few functioning facilities were padlocked by individuals to prevent residents who were not close family from using the facility. Those who could not access existing facilities resorted to open defecation and the use of plastic bags. In some instances, residents were able to build pit latrines or a waterborne toilet:

*'Some of the facilities are locked or closed in the evening, and we are left without any other option than using anything at our disposal.'* (Resident of informal settlement A)

For some, sharing supplied toilets with others goes against their personal, cultural or religious beliefs:

*'I personally feel uncomfortable to share a toilet with other people who are not close family or friends.'* (Resident of informal settlement B)

Residents (mainly female) complained about the lack of privacy and comfort:

*'Can you comfortably use this toilet where everyone is looking at you? There is not even a lock, what can happen if somebody just opens that door?'* (Resident of informal settlement B)

Almost half of the facilities across the study areas were non-compliant with basic privacy requirements (e.g. lock and doors). Women felt uncomfortable being in a queue with men to use the same facility.

Many of the facilities are located within <200 m, but users were reluctant to use the facilities. Fifty-eight percent

(58.0%  $n = 222$ ) of respondents indicated that the walking distance and the location to the facility was a deterrent, especially physically challenged individuals and children:

*'Walking over 500 m just for a toilet does not make sense to me; what happens if I have a running stomach? I rather use a bucket than walking such a long distance.'* (Resident of informal settlement A)

Hygiene and health constraints also determine residents' practices as (mainly female) respondents reported that the toilet was filthy:

*'Every time I use this toilet my private parts start itching and after visiting the clinic, I will be informed that I contracted an infection. I decided to defecate in the bush behind my house.'* (Resident of informal settlement A)

Some sanitation technologies (e.g. urine diversion toilet) do not match their needs nor their religious obligations:

*'Dry sanitation technologies are not welcome mainly because of not corresponding to people's practices. As consequence, many users resorted to refuse to comply with the use or resist to change.'* (Caretaker A)

For certain categories of users (e.g. Muslims, or physically challenged individuals), the lack of hand wash facilities and bucket disposal means that they are unsuitable:

*'These toilets cannot be used by a disabled person because there is no ramp, and the toilet cannot accommodate a wheelchair.'* (Resident of informal settlement A)

These practices have several impacts including the limitation of access and delay/interruption of the FBSan provision, increasing cost of maintenance, further lack of access to facilities and deterioration of living condition of residents, human health and the environment. This has led to the increase in the number of people lacking access to sanitation facilities, sparking, in certain cases, violent service delivery protests as many informal settlement residents believe that municipalities have failed their duties to provide the much needed FBSan.

## DISCUSSION

This study shows that sanitation technologies and facilities provided to informal settlements scarcely address users' needs or settlement conditions, are not context appropriate and are often poorly maintained. Jenkins & Scott (2007), Simiyu (2015) and Winter et al. (2018) have discussed factors associated with women's ability and willingness to access and utilize different sanitation alternatives. The (un)availability of sanitation, condition of facilities and lack of knowledge of way of use can perpetuate certain malpractices. Some of these practices (e.g. open defecation) are often related to education level and religion (Sara & Graham 2014), lack of cleanliness, perception of safety, feeling of comfort and privacy and habits (Winter et al. 2018). The vulnerability of informal settlement residents combined with a wide range of social concerns around poverty and unemployment, high levels of crime and health conditions was aggravated by the lack of access to sanitation highlight the need for further in-depth research, particularly within the context of the FBSan.

Safety concerns (fear of being robbed, raped or even killed) emerge as the most common factor associated with the adoption of alternative and often undesirable, sanitation practices. The poor condition of the facility is being associated with users' fear of contamination. Taing (2015) and Garn et al. (2015) have found that the sustainable use of a sanitation facility is determined by its cleanliness. In our own study, the filthy conditions of many facilities deterred residents from using the facilities. As the WHO (2009) shows, unhygienic sanitation practices lead to disease. There is a vicious cycle as not using the facilities results in unhygienic practices which are being triggered by perceptions of users, in particular by the fear of contamination when accessing a filthy toilet. Safety and health concerns inform user practice most specifically in South Africa where there are high levels of poverty, unemployment and crime (Stats SA 2019). While there were a large number of facilities in each of the settlements, many of these were dysfunctional and unusable. Where facilities are being used, there are particular problems that lead to the damaging of these facilities such as misuse, vandalism, lack of understanding, compliance, or disregard of use patterns or requirements.



Since many toilets were dysfunctional, resulting in long queues, many residents (especially females) were not comfortable using the facilities. Similar findings by [Joshi \*et al.\* \(2011\)](#) reveal that privacy and comfort are desirable – and often determining – factors associated with the use of a sanitation facility. The issue of walking distances and inappropriate location of the facilities has been rarely addressed in the literature, and yet, it has consequences for the acceptance and use of the facility. The few studies that have addressed this issue have asserted that walking long distances to access a sanitation facility may cause discomfort amongst users ([Winter \*et al.\* 2018](#)). In this study, long walking distance and position or location of the facility were found to be deterrents due to safety concerns and physical nature of user (e.g. elderly).

Access to urinals and the disposal of night pail content have not been thoroughly discussed in the literature. Our findings suggest that the lack of facilities for alternative use such as urination and disposal of night pails has contributed to the poor condition of facilities. Those who access the facilities with the sole purpose of emptying their buckets are unlikely to clean the toilets. Long queues deterred users who reverted to unhygienic practices by disposing the night pails or plastic bags wherever they can. The municipality has provided porta-potties as an alternative, but this is perceived to be socially unacceptable.

For some, sharing a facility with individuals not belonging to their inner circle or culture is intolerable. Previous studies ([Jenkins & Scott 2007](#); [Duncker 2014](#)) have shown that attitudes, perceptions, expectations and aspirations, as well as beliefs, are key factors for the acceptance and sustained use of a sanitation facility. The FBSan has created expectations so that residents of informal settlements in South Africa expect nothing less than their own full flush toilet ([Duncker 2014](#)). Such aspirations and expectations have developed negative attitudes toward any other alternative sanitation technology ([Mkhize \*et al.\* 2017](#)). Unfamiliarity with the technology, cleanliness or lack of awareness meant that many users did not comply with the use requirements of the facilities. These findings concur with [Taing \(2015\)](#) who asserted that the entitlement mentality and users' attitude toward existing facilities can lead to non-compliance. Dysfunctional facilities are often abandoned, and in turn, trigger vandalism and theft of parts. Due to vandalism,

theft and abuse of facilities previously serviced areas now experience sanitation backlogs. Although all these factors have informed residents' sanitation practices, our data as well as that from previous studies shows the way in which safety concerns ([Tumwebaze \*et al.\* 2013](#); [Simiyu 2017](#)), high number of users ([Lagardien & Muanda 2014](#)) and lack of cleanliness ([McFarlane 2008](#)) are interconnected. For instance, the high number of users and long waiting queues (found to be related to the high number of blocked toilets and unavailability of facility at the time of need) are typical characteristics of access to sanitation in an FBSan context. Specific factors that inform sanitation practices are context-specific and -dependent on local circumstances and conditions surrounding each informal settlement.

The FBSan policy has been the key guiding framework for the provision of basic services ([DWAF 2008](#)). It has, however, focused on the provision of facilities and overlooked the complex set of social issues existing in informal settlements in general and in South Africa more specifically. The current rate of alternative sanitation practices across the study settlements confirm findings from previous studies ([Lagardien & Muanda 2014](#); [Pan \*et al.\* 2018](#)), suggesting that service providers have little or no knowledge of the existing sanitation practices of the communities for whom they have responsibilities. Without considering user needs and behavior, informal settlement residents will continue to suffer the consequences of poor access to sanitation. The mismatch between supply and demand perpetuates vicious cycles where facilities are either not used at all, are vandalized or are used reluctantly.

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## CONCLUSION

Despite the availability of sanitation facilities, access remains inequitable amongst residents across informal settlements in South Africa. The data reflect on the various sanitation practices of residents including the use of buckets, porta-potties, plastic bags, and existing facilities within and outside their settlements for either defecating or discharging bucket content and open defecation. Several interrelated factors, including safety concerns, cleanliness and location of the facility, walking distance, high number of users, lack of privacy and comfort, fear of contamination and lack of

choice, have informed the adoption of compromised sanitation practices. All these factors derive from/or are associated with the social, physical and institutional environment surrounding informal settlements and their residents. These factors are site specific which means that one size does not fit all. The roll out (supply) of facilities without recognizing the particular context of a specific settlement, perpetuates vicious cycles of misuse or no use at all. Users decide to adopt practices that are relevant to their needs and conditions or that offer some level of comfort, privacy and security at the very least. Several of the sanitation practices adopted by residents have severely impacted on the provision of sanitation services and thus exacerbated sanitation backlogs. This has in some instances sparked violent service delivery protests. Interventions and policies relating to sanitation service provision should consider the multiple and varied needs of residents, practices (and related factors) and conditions of their settlements prior to the selection and deployment of facilities to informal settlements in South Africa. In order to eradicate sanitation backlogs, it is critical to consider social factors that drive behavior and use/abuse of sanitation provided under the FBSan in informal settlements.

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