

1 **Experiences of Shared Sanitation – towards a better understanding of access, exclusion and ‘toilet**
2 **mobility’ in low income urban areas**

3 **Short title: Experiences of Shared Sanitation in Kumasi, Ghana**

4 Keywords: exclusion; Ghana; SDG 6; shared sanitation; urban

5 **ABSTRACT**

6 Sustainable Development Goal target 6.2 calls for "adequate and equitable sanitation for all". In dense,
7 rapidly urbanising cities, the challenge of providing household sanitation means that many countries
8 include shared, community and public toilets in their national strategies to meet global goals.
9 However, shared sanitation is associated with several problems including poor management and
10 exclusion. This study examines shared sanitation access and use by using innovative mapping methods
11 in compound house units in Fante New Town, Kumasi, Ghana.

12 The study reveals that 56 percent of house units have at least one toilet. Of the 47 percent of people
13 living in these house units, almost a third were excluded from using the toilet. Tenure status was the
14 main driver for exclusion; with nearly half of people reporting non-usage 'not allowed' to use the toilet
15 by the landlord. The paper outlines key policy interventions to address broader institutional and
16 regulatory barriers to shared sanitation. At the settlement level, this includes provision of safe, well
17 managed public toilets and engagement with landlords to improve house unit toilet access. At the
18 national and global level, the paper calls for nuanced indicators to assess quality of access, to ensure
19 shared sanitation works for everyone.

20

21 **INTRODUCTION**

22 The Sustainable Development Goals (SDGs) set out a wide range of global development imperatives
23 to which member states of the United Nations (UN) are now committed. SDG 6 focuses on water and
24 sanitation services. SDG 6.2 sets a 2030 deadline for the world to “achieve access to adequate and
25 equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs
26 of women and girls and those in vulnerable situations” (UNDP 2018). The indicator selected to
27 measure SDG 6.2 is “the proportion of the population using safely managed sanitation”. The SDGs are
28 more ambitious than the preceding Millennium Development Goals, both in terms of scale (SDG 6.2
29 calls for universal access) and level of service (‘safely managed sanitation’ implies complete systems
30 for safe management of excreta, rather than just access to an improved toilet).

31 To reach these more ambitious targets, many countries and commentators argue that shared
32 sanitation facilities will have to be included in national programmes (Evans et al 2017). Shared

33 sanitation is an umbrella term that includes public toilets (usually, but not always, accessed on a 'pay-
34 per-use' basis), community shared toilets (usually managed by a local voluntary, community-based, or
35 small-scale private provider and used by a limited number of households) and toilets which are shared
36 between known households, often located within a shared compound. The most recent estimates
37 from the UN suggest that at least 600 million people worldwide depend for their sanitation solely on
38 a toilet that is of an 'improved type' but which is shared with other households (WHO/UNICEF 2017).

39 Many scholars assert that in informal urban settlements with high population densities, shared
40 sanitation is the only viable option (Mara 2016; Schouten and Mathenge 2010). Limited space makes
41 private facilities unfeasible (Mara 2016; Katukiza et al 2012), and their cost makes them unaffordable
42 for the urban poor (Mara and Alabaster 2008; Adubofour et al, 2012). Under these circumstances,
43 community-based shared sanitation are considered to be an affordable alternative, providing they are
44 well-maintained (Katukiza et al 2012). The UNICEF/WHO Joint Monitoring Program for Water,
45 Sanitation and Hygiene (JMP) suggested, during the development of recommendations for post-2015
46 monitoring that when a limited number of people who know each other share a sanitation facility, any
47 increased risk associated with shared sanitation is mitigated (WHO/UNICEF, 2014 p.33, and further
48 discussed in Heijnen et al 2015). This is supported by Mara (2016) and Obeng et al's (2015) studies
49 which find that outcomes from sanitation facilities shared between neighbours are better than those
50 of communal facilities.

51 While shared sanitation plays an important role, some scholars have concerns. One of the most
52 commonly cited concerns relates to health outcomes. Several studies claim that shared sanitation is a
53 major risk factor for diarrhoea. For example, a multi-country study by Fuller et al (2014) observed a
54 44 percent higher diarrhoea prevalence in Madagascar among users of shared sanitation facilities,
55 compared to users of private facilities. The impact of poor health outcomes among users of shared
56 sanitation on toilet use behaviour was not examined by the study. Heijnen et al (2014) also found that
57 users of shared sanitation facilities are at increased risk of helminth infection and polio, as well as
58 prenatal death and prematurity although they also noted that there are numerous potential
59 confounders to these relationships since populations sharing sanitation are more likely to be poor
60 than those who do not. While these studies show a connection between health outcomes and sharing,
61 they do not establish the causal pathway for these elevated risks.

62 Poor health outcomes associated with shared sanitation are understood to be due to lack of
63 cleanliness. Shared toilets are less likely to be cleaned on a regular basis than private facilities, and
64 more likely to have faeces and flies present (Heijnen et al 2015; Routray et al 2015). The picture may
65 be more complex however; Exley et al (2015) found that shared sanitation facilities were considerably
66 less contaminated by e-coli than private toilets. User acceptability of sanitation facilities can often be

67 weakened by lack of cleanliness (Roma et al 2010). A number of studies have found that shared
68 sanitation facilities are less likely to be functioning than individual household latrines, with some being
69 closed for significant periods of time due to blockages (Routray et al 2015). During this time, the
70 likelihood of users practising unsafe sanitation behaviour increases.

71 One of the major challenges when seeking to understand the impact of sharing on sanitation
72 behaviours and health outcomes, is that urban populations may not be dependent on a single
73 sanitation facility. Most residents of low-income settlements, for example, may have access to a
74 number of sanitation options including toilets in the compound or household, community shared
75 toilets, public toilets and toilets in the workplace or at school. Their position within the household (i.e.
76 old/young or tenant/landlord) and wider community may determine when and how they access a
77 shared toilet, and the degree to which they can choose between sanitation options.

78 For this reason, it may be useful in urban areas to move away from a binary consideration of have/ do
79 not have access to a household toilet and towards an understanding of the dynamic use of a range of
80 toilet options. In this study we attempted to unpack toilet usage in an urban area where users have
81 choices and options – in other words they can be considered to have ‘toilet mobility’. This provides a
82 lens through which to examine both the options available to individuals and the reasons for, and
83 barriers to, users accessing these facilities. Toilet mobility can be spatial (i.e. use of multiple sanitation
84 technologies in different locations), change over time (i.e. night and day), and vary according to the
85 demographic group in question. It is also linked to the provision of toilets in places of work, and schools
86 and to the consideration of the cost of using the range of toilet options available. In this study we have
87 limited our analysis to the factors that affect access to, and use of, shared sanitation facilities which
88 are located within the house where a person lives. This study examines this issue through a detailed
89 case study of Fante New Town, Kumasi, Ghana.

90 **METHODOLOGY**

91 **Study site**

92 The study was conducted in Fante New Town, an electoral ward in Kumasi, Ghana. Kumasi has a
93 population of around 2.7 million and is located in the Ashanti region of Ghana. According to the most
94 recent SFD report for the city, a high percentage of people are reliant on ‘public’ toilets (39%). Fifty-
95 seven percent of the population use ‘private’ toilets but many of these are shared. There are a range
96 of disposal routes – many of the pit latrines are well designed Kumasi Improved latrines, many septic
97 tanks have outlets connected to proper soakaways. There is also a nascent market for new container-
98 based services provided by a local social enterprise, ‘Clean Team’. There is a faecal sludge treatment

99 plant and emptying services are prevalent but approximately 45% of faecal flows are disposed illegally
100 in the environment (Furlong, 2015).

101 The most recent population census in 2010 stated that the population of Fante New Town electoral
102 area was 42,000 (Djagana 2017). Fante New Town, and Kumasi as a whole, is a popular destination for
103 migrants, particularly those from the north of Ghana. A significant proportion of this migrant
104 population is transient and some, including those who work as truck pushers (labourers who use carts
105 or wheelbarrows to transport goods), sleep on the streets and do not have access to private sanitation
106 facilities (Djagana 2017). It is mostly for this population that the public toilets in Fante New Town were
107 constructed. Over time, however, the local population increasingly patronised the public toilets
108 themselves, in part due to the legal abolition of bucket latrines which were previously very common
109 (Caplan 2010). As a result, similar sanitation behaviours are now practiced by the different ethnic and
110 tribal groups (Djagana 2017).

111 In order to identify interactions between multiple household groups and multiple sanitation options,
112 data collection focused on a bounded area of Fante New Town (Figure 1). Research was facilitated by
113 two key informants in the community – a toilet artisan and one of the elected local assembly members
114 for Fante New Town. The specific study area was chosen through consultation with both key
115 informants. It was selected as being typical of Fante New Town and having a range of different toilet
116 provisions.



117
118 Figure 1. The study area (Latitude 6.692691, Longitude -1.616499)

119 Communal living in Ghana means multiple families live within a single compound or house unit sharing
120 sanitation, cooking and other facilities. This makes defining a ‘household’ complex. For the purposes
121 of this study, the term ‘house unit’ was used to refer to a group of people living under the same roof,

122 often within a compound house. House units consisting of several separate families were prevalent in
123 Fante New Town. The number of people living in a house unit therefore varied from two to eighty.
124 While the median was twenty, over half of people lived in house units with between twenty-five and
125 eighty residents.

126 **Research methods**

127 Data were collected during a two-week period in June and July 2017, using three tools; toilet mapping,
128 natural group discussions and focus group discussions. Mapping, using the mWater Surveyor
129 application (version 8.4.6), was conducted to locate sanitation facilities in the study area. At each
130 house unit, the presence or absence of a toilet facility was logged along with the GPS coordinates.
131 Where the toilet facility was accessible (i.e. not occupied or padlocked), it was examined,
132 photographed and recorded. Figure 2 summarises the available facilities.

133 Natural group discussions were held to identify the number of occupants living in each house unit and
134 to confirm the presence or absence of a toilet. If there was a toilet, the technology and number of
135 toilet users was established, as well as any reasons for partial or non-use. If there was not a toilet, the
136 reason for not having a toilet was discussed, and the way in which the residents met their sanitation
137 needs was established. Use of toilet facilities outside of the house unit was also explored. Toilet use
138 was self-reported by house unit members during natural group discussions. As self-reporting can
139 result in desirable behaviours being over-reported, two focus groups were conducted at the end of
140 the study to validate the findings. Extensive pre-testing of the focus group guides was undertaken.
141 The participants were recruited by the two key informants. The first group comprised of six males,
142 three of whom were community leaders. The second group of participants were five women. Both
143 groups comprised both landlords and tenants. The focus groups explored the factors affecting
144 sanitation behaviours. Responses were coded, and the number of times topics were mentioned was
145 counted and analysed.

146 Full ethical approval was obtained from the University of Leeds Faculty of Mathematics and Physical
147 Science (MaPS) and Faculty of Engineering joint faculty research committee. All official and regulatory
148 permissions necessary for conducting research in Fante New Town, Ghana were also coordinated and
149 obtained.

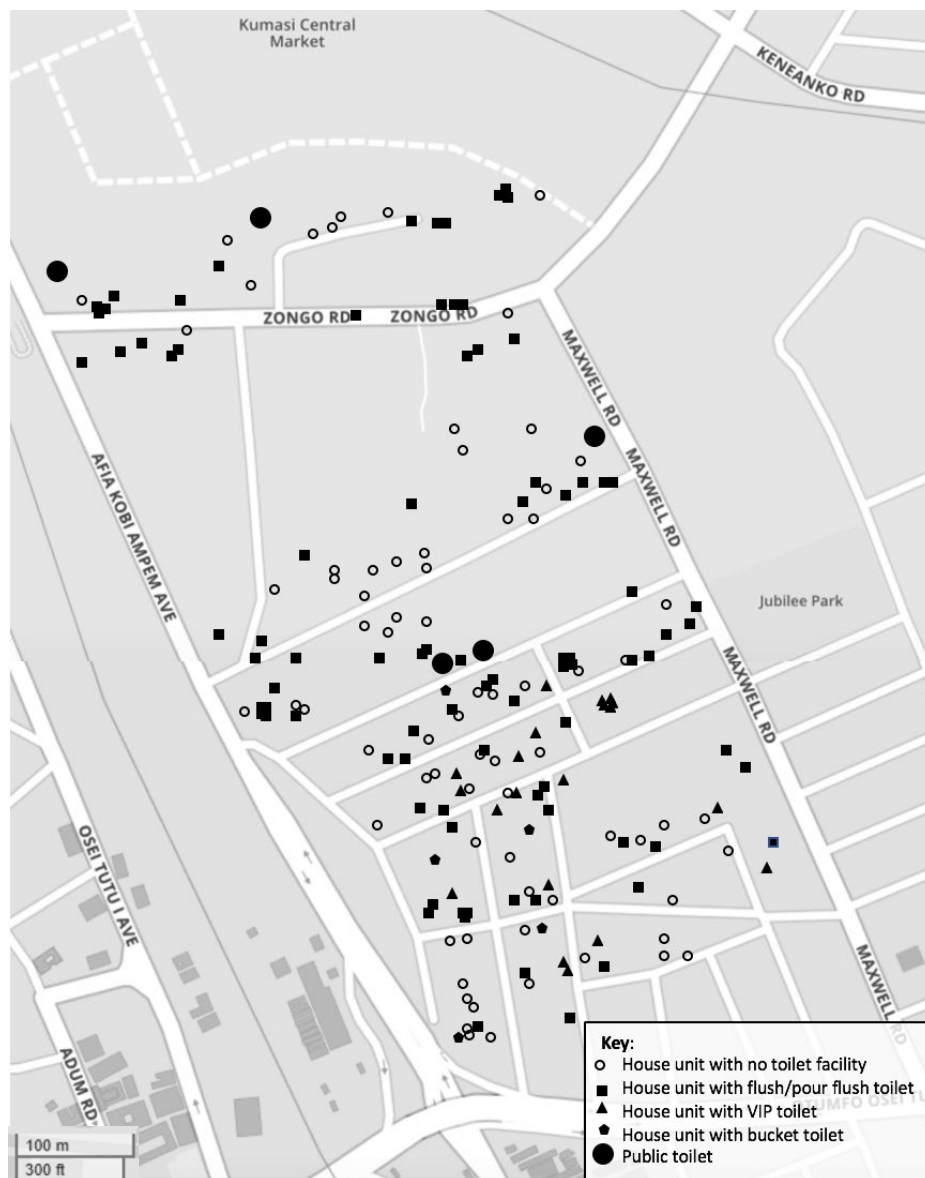
150 **RESULTS**

151 A total of 152 house units were mapped. More than half of the house units were occupied by multiple
152 tenants and a live-in landlord. A smaller proportion were occupied solely by the family who owned
153 the property and the remainder were occupied by multiple tenants and owned by a live-out landlord.
154 The total estimated population studied was 2,743.

155 **Toilet coverage and technology**

156 158 toilets were identified within the house units studied (Figure 2). Figure 2 shows clearly that neither
157 public nor 'private' toilets in house units are distributed evenly throughout the area. The northern
158 part of the study site has a less dense penetration of toilets in housing units but most house units here
159 are closer to the public toilets than the southern part of the community.

160 Eighty-four percent of toilets inside house units were flush toilets and 12 percent were Kumasi
161 ventilated improved pit latrines (KVIPs). Of the remainder, 3 percent were bucket latrines (locally
162 referred to as 'pan' latrines), which are illegal, and one house unit had a subscription to the Clean
163 team service. In addition to household toilets, there were 5 public toilet facilities with 57 seats
164 collectively, all of which used flush technology. There were no specific eligibility requirements to use
165 the public toilets, but all were operated on a pay-per-use basis.

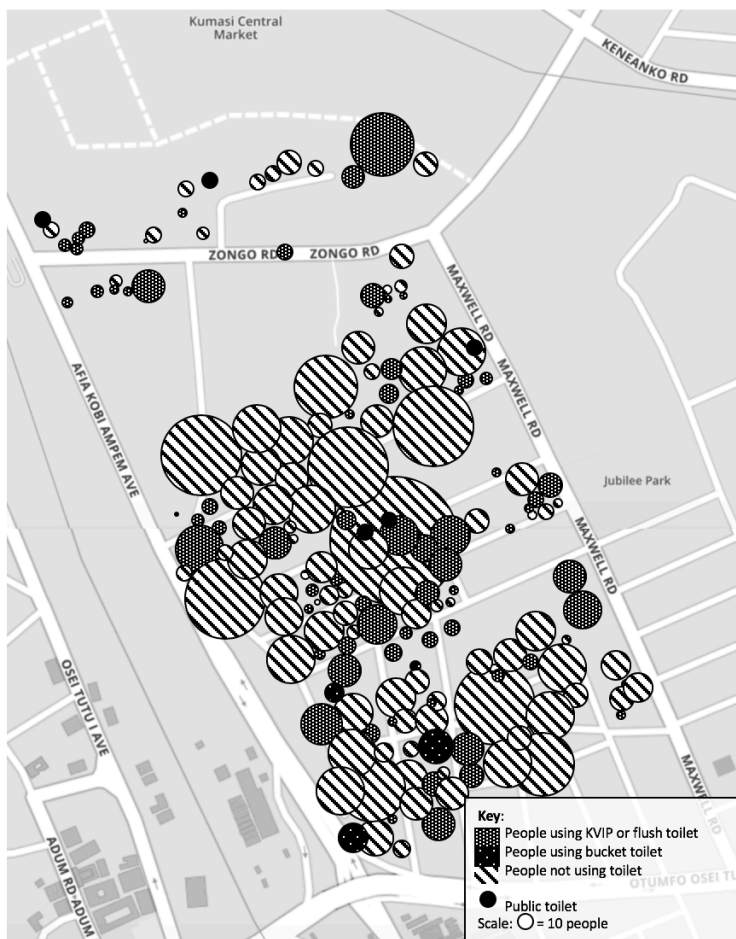


167 Figure 2. Location of toilet facilities in the study area

168 Fifty-six percent of house units had at least one toilet; 35 percent had one and 21 percent had more
169 than one. Houses without a toilet facility were larger on average (22 people) than those with one or
170 more toilet facility (15 people).

171 **Access to 'private' toilets**

172 Figure 3 shows the distribution of the population according to whether they used a 'private' toilet and
173 if so, the type of 'private' toilet they used.



174
175 Figure 3. Individual toilet use in the study area

176 Forty seven percent of the population lived in a house unit with one or more toilets. Assuming
177 everyone living in a house unit with one or more toilet uses that toilet, the average number of
178 potential users per toilet was therefore 8.

179 In 59 percent of house units with at least one toilet, all the residents were using the toilet(s). Of these
180 house units, half had less than eleven residents. The largest number of residents in these house units
181 was 25. In the majority of cases, users were sharing both the toilet sub- and super-structures.

182 Thirty five percent of people who lived in house units with one or more toilet facility did not use them.
183 The rate of non-use of toilets was higher in house units with only one toilet (46 percent), compared
184 to those with more than one (19 percent).

185 In summary, 56% of house units had at least one toilet and 47% of the population lived in a house unit
186 with at least one toilet, but only 31% of the total population were using a toilet in the house unit
187 where they lived.

188 For people who lived in house units without toilets and people who did not use the toilets inside the
189 house unit for defecation, the alternative was either to use the public toilets or to practice a variety
190 of open defecation, particularly at night time. These include the use of so-called flying toilets which
191 were often disposed of with the household waste and use of buckets which were emptied into open
192 drains. It is worth noting here that observation suggests that urination in the open is significantly more
193 widespread than open defecation.

194 **Factors impacting access to house unit toilet facilities**

195 Amongst people living in house units with toilets who did not use them, a range of reasons were given
196 (Panel 1). The most significant factor, reported by almost half of participants (49 percent), was non-
197 permittance. 84 percent of those who reported non-permittance as a barrier to toilet use stated that
198 they were not allowed because the toilet was used exclusively by the landlord and their family.

Panel 1: Reasons for non-use of house unit toilets

Case Study: House Unit A.

Fifty people reside in this house unit and there is one flush toilet. Only the landlord is permitted to use the toilet because she reports that the toilet uses a lot of water and the water bill is too difficult to split between all the residents. The remaining forty-nine residents patronise the public toilets, with many practicing open defecation outside of opening hours.

199

200 However, the results also point to aspects of choice relating to the toilets themselves. While 18
201 percent of flush toilets in house units were not being used by everyone who lived in the house unit,
202 this rose to 37 percent for KVIP toilets and 60 percent for pan latrines. The one and only 'Clean Team'
203 toilet was not used by all house unit residents.

204 Nine percent of people stated that they did not use their house unit toilet due to the technology;
205 usually having a preference for flush toilets, 6 percent because the toilet was in bad condition and 4
206 percent because the toilet had a foul odour. Other reasons for not using the house unit toilet were
207 that the respondent didn't pay to get it unblocked (2 percent), use by all members increases the
208 frequency of emptying (1 percent), aversion for paying monthly maintenance fees (<1 percent) and
209 embarrassment of having to knock (<1 percent). For 14 percent of non-users of a toilet in a house unit,

210 there was no reason for non-usage; in some cases, this appeared to be due to discomfort explaining
211 their reasons in public and in others it was because respondents were not present at the time of
212 mapping. However, the use of multiple data collection tools allowed for triangulation, with
213 observations at the house unit level verified by focus group discussions.

214 Demographic factors appear to influence use of public toilet facilities. In all house units studied, if
215 there was a functional, or even semi-functional toilet present, it was always used by elderly residents
216 and people with disabilities. This was the case even when other members of the house unit avoided
217 using it due to its poor condition or odour (Panel 2).

Panel 2: Demographic characteristics of users and non-users

Case Study: House Unit B.

218 Twenty people reside in the house unit which has one pan latrine. One elderly man uses the pan
latrine because its location is convenient, while the remaining nineteen residents avoid it due to
unpleasant odour and use the public toilets instead.

219 Children also had fewer sanitation options available to them. Caregivers reported preventing their
220 children from using the public toilet alone due to fears of them falling in. The demand on caregivers'
221 time having to accompany their child to and from the public toilet was also cited as a barrier to children
222 using public toilets.

223 Apart from one, all public toilets closed overnight, with some closing as early as 19:30 and not opening
224 until 04:30. During this time, the majority of people who did not have access to a toilet within their
225 house unit and needed to relieve themselves, reported that they practiced open defecation.
226 Individuals who used a toilet facility within their house unit did not appear to be affected as the toilet
227 was accessible during the night.

228 Among house units that did not have a toilet facility, the most commonly cited reason for not having
229 one, was lack of space. Many house owners chose to use space that could be used for a toilet facility
230 for an additional bedroom, washroom or storage instead. In a number of cases, households that did
231 not have toilet facilities at the time of study, used to have a pan latrine but when they were outlawed,
232 they used the space for storage, rather than as a toilet facility.

233 DISCUSSION AND CONCLUSION

234 In this study, the location of private and public toilets in Fante New Town was mapped. The
235 distribution of toilets is patchy, but overall, most people live either in a house unit with one or more
236 toilets, or reasonably close to a public toilet facility. Theoretically, nearly half of the population have
237 the option to choose to use either private facilities shared between households in the house unit or

238 the public facilities (in other words, they have high toilet mobility). However, despite a relatively high
239 level of provision of toilets at the house-unit level (56% of house units had at least one toilet) close to
240 70% of the population appear to be unable to use a toilet in the house unit and therefore experience
241 very limited toilet mobility. A number of factors affect access to, and use of, these private sanitation
242 facilities. Some of these operate in an exclusionary manner. For some people, this relates to the non-
243 availability of a toilet within the house unit. However, for those residing in a house unit with one or
244 more toilets, a number of demographic and regulatory factors constrain mobility of use.

245 The study found that the most common reason for non-use of house unit toilets was due to landlords
246 preventing use of toilet facilities by tenants. Mazeau (2013) and Adubofour et al (2012) also identified
247 the influence of landlords on toilet use. The current study suggests a much stronger role for landlord
248 influence than in the earlier work. Many landlords maintained sole use of toilet facilities at the house
249 unit level. Mara and Alabaster (2008) promote provision of facilities to groups of households rather
250 than individual ones. Hawkins et al (2013) support this notion, suggesting that providing that groups
251 are small enough, maintaining the cleanliness of the facilities would not be problematic. However, this
252 study substantiates concerns by other scholars that sharing of toilet facilities between too many
253 households or where intra-household dynamics are adverse, could lead to disagreements and non-
254 use (Obeng et al 2015). This may be a particular problem in the context of Ghana where the prevalence
255 of multi-household units is high. This also highlights the complexity of urban sanitation and underlines
256 the importance of strong contextual understanding in the development of successful interventions
257 (Mazeau 2013).

258 Turning to public toilets, age was a significant factor driving exclusion. The barriers to children
259 accessing public toilets are consistent with the findings of other studies. For example, the fear of
260 children falling into the toilet was also voiced by participants in a previous study in Kumasi (Adubofour
261 et al 2012). Likewise, the demand on caregivers' time of disposal of children's faeces is widely
262 recognised (Choudhury and Hossain 2006). There is limited literature discussing exclusion of the
263 elderly and people with disabilities from public toilets. However, those that have analysed their access
264 to sanitation facilities note that the issue often stems from a lack of mobility (Peprah et al 2015).

265 Access to public toilets was also constrained by institutional and regulatory dynamics. Four out of five
266 of the public toilet facilities were closed overnight in Fante New Town. This, coupled with the exclusion
267 of many residents from using the toilet facility at their house unit, resulted in them practising open
268 defecation. A study into communal sanitation in Kibera, Kenya (Schouten and Mathenge 2010) and
269 another in India (Heijnen et al 2015) also found that many communal facilities close at night but failed
270 to investigate how people relieve themselves during this time. Other studies found that even when
271 public toilets were open at night, factors such as increased danger, particularly for women and girls,

272 distance and uneven terrain, limited their use (Tumwebaze et al 2012; Jenkins and Sugden 2006).
273 These barriers to public toilet use at night raise the question of whether, if the population of Fante
274 New Town had continuous access to public toilets, they would use them, or if open defecation would
275 prevail.

276 Overall, there seems to be a trade-off between the choices people in the household and community
277 in Kumasi can make, and broader structural relationships that prevent them from choosing and
278 accessing certain shared or public facilities. Demographic and regulatory dynamics combine to exclude
279 certain groups (especially tenants, children and the elderly), from accessing safe and hygienic
280 sanitation options at different times. When choices are made, the options may be limited, and have
281 negative consequences for health and wellbeing (e.g. use of dirty latrines or open defecation). In this
282 sense, 'toilet mobility' is unequally skewed to those who are: a) able to pay for facilities and/or have
283 access in the compound (i.e. landlords and their families) and b) those who are physically able to
284 access the alternative options. User decisions are therefore in a constant trade-off between
285 convenience; comfort; affordability; accessibility and health.

286 The implications of these findings for policy responses in Kumasi fall into two broad categories – those
287 which address broader institutional and regulatory barriers, and those which support increased
288 mobility. Structural changes relate to shifting the quality and extent of toilet provision so as to increase
289 options for individuals. This might include the provision and more active management of additional
290 public toilets, including the provision of well managed and safe options for users at night and adequate
291 and safe accessibility for children, older people, and those living with disabilities, day and night. It
292 could also focus on improving the provision of toilets at the house unit. In large multi-household units
293 our study suggests that the number of toilets provided is close to inadequate (in house units with
294 toilets, assuming every resident uses the toilet, the average number of users per seat is 8). On the
295 regulatory side, there are tools available to create incentives for improved household provision (such
296 as enforcing the building regulations that require provision of suitable sanitation). However, given the
297 risks to low income households if rents are raised to cover costs, these interventions should be seen
298 within the wider context of sustainable housing supply for Kumasi. Legal or social/economic
299 instruments that ensure landlords provide adequate, well serviced toilets for each household or
300 minimum number of tenants, coupled with appropriate financial incentives, could also address this.
301 The need for proactive engagement with landlords to encourage the provision of adequate, in-house
302 facilities to tenants in Kumasi has already been noted (see, for example, Mazeau 2013).

303 The findings for this study also contribute to the ongoing debate about the extent to which shared
304 facilities should be counted towards universal access in international targets, particularly SDG 6.2. Our
305 research reinforces earlier concerns that access to sanitation that is shared between households does

306 not necessarily equate with access to sanitation that can be used. Irrespective of the number of people
307 living in a housing unit, individuals were found to be excluded from using a toilet for a wide variety of
308 reasons and this exclusion was overwhelmingly experienced by tenants rather than by landlords.
309 Where access to sanitation is reported by the head of a household during a survey, this may result in
310 an overestimate of the numbers of individuals who have access, since heads of households are highly
311 likely to be landlords in the sort of house units we found in this study and are likely to report access
312 to a toilet even if all the residents cannot use it. At the national and regional level therefore, it seems
313 plausible that the introduction and use of more nuanced indicators of the *quality of access* to toilets
314 could begin to address the structural faults inherent in the push both for a focus on household toilets
315 and (from some countries), for the inclusion of public and shared facilities in national and international
316 reporting. A measure which assesses toilet mobility and thereby focuses on the agency of individual
317 users and the tendency of structural factors to support this, could provide stronger incentives for a
318 more effective provision of sanitation services which work for everyone.

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