Emerging categories of urban shared sanitation

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Abstract

With 2.6 billion people without access to improved sanitation facilities and with a growing urban population globally, shared sanitation in the form of public or community latrines is a pragmatic way of increasing coverage, but it is currently not deemed "improved". This paper explores the variety of facilities that currently exist in order to identify what would enable some of these latrines to be classed as acceptable and to ensure that future shared sanitation facilities meet minimum standards. The categories mostly relate to issues of ownership, management, location and finance rather than technological considerations. An extensive literature review reveals that the users' perspective of acceptability is largely absent from current discussions.

Key words
Developing country, public toilet, sanitation, urban,

Introduction
Currently 2.6 billion people do not use improved sanitation. The United Nations' Millennium Development Goals (MDGs) set a 2015 target of reducing the proportion of people without sustainable access to basic sanitation by 50% (UN 2010). The WHO / UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation estimates that:

- Although 1.3 billion people have gained access to improved sanitation since 1990, the world is likely to miss the MDG sanitation target by a billion people.

- Seven out of ten people without improved sanitation live in rural areas, but the number of people in urban areas without improved sanitation is increasing because of rapid growth in urban populations (WHO & UNICEF 2010).

Adequate sanitation brings a range of benefits, including health (through reduced disease), dignity (through privacy and comfort), education (through making school more inviting for staff and pupils), security (through avoiding going outside at night) and environmental (through reduced pollution), all leading to economic improvements.

For MDG monitoring, an "improved" sanitation facility is one that "hygienically separates human excreta from human contact" (ibid) using examples of "improved" sanitation with categories based on the "sanitation ladder" (figure 1), where users can progress from one facility to another.

Inappropriate standards

Adopting rigid, "one size fits all" standards can be detrimental to progress. The Ventilated Improved Pit (VIP) Latrine was a significant advance in appropriate sanitation technology in the 1970s, but they were expensive, limiting their uptake (Robinson 2002). Their adoption as both a formal and informal benchmark of quality prevented people from constructing alternative, cheaper but still adequate latrines. The "Archloo" was specifically developed to provide a lower cost but socially acceptable alternative to the standard VIP (Glover 2000).

Shared sanitation

The JMP categories are based on the technology used, apart from "shared

Improved sanitation

Improved sanitation facilities:

Ensure hygienic separation of human excreta from human contact. They use the following facilities:

- Flush/pour flush toilet to:
  - Piped sewer system
  - Septic tank
  - Pit latrine
- Ventilated improved pit latrine (VIP)
- Pit latrine with slab
- Composting toilet

Shared sanitation facilities: Sanitation facilities of an otherwise acceptable type shared between two or more households. Only facilities that are not shared or not public are considered improved.

Unimproved sanitation

Unimproved sanitation facilities: do not ensure hygienic separation of human excreta from human contact. Unimproved facilities include pit latrines without a slab or platform, hanging latrines and bucket latrines.

Open defecation: when human faeces are disposed of in fields, forests, bushes, open bodies of water, beaches or other open spaces of disposed of with solid waste.
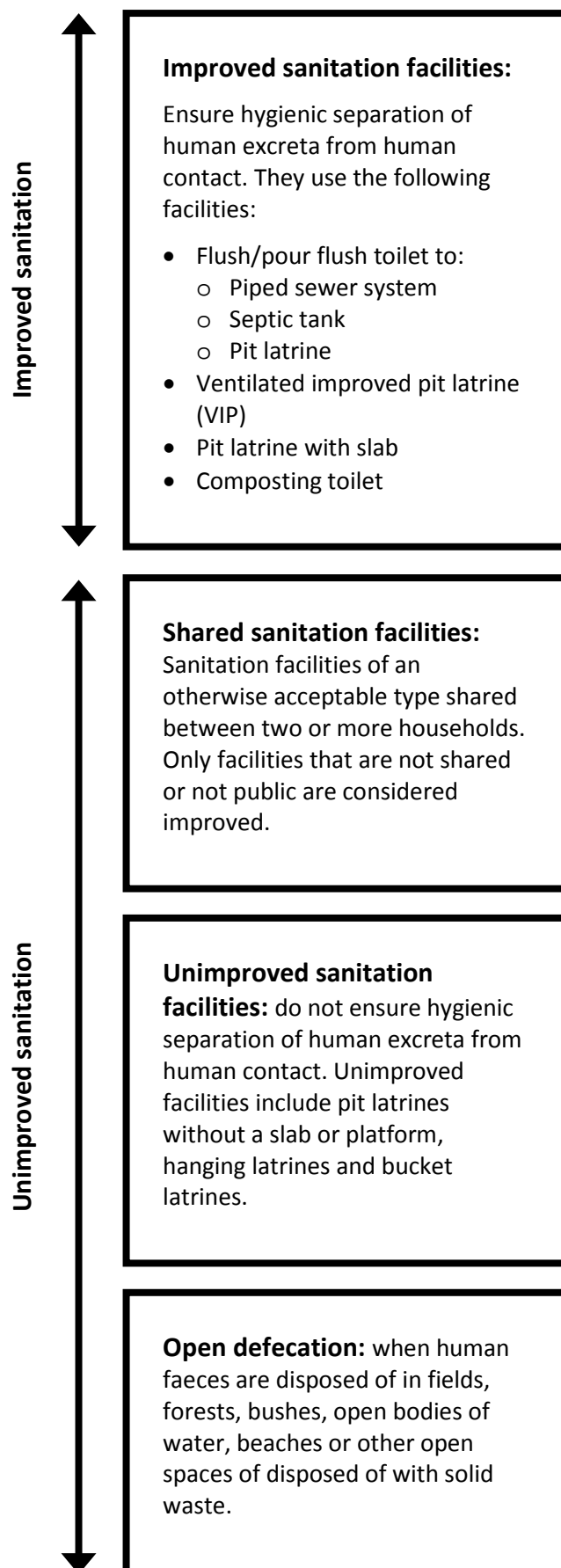
Figure 1. Sanitation ladder (based on JMP 2010)

sanitation", which is a social classification. The fraction of people in developing countries, particularly those in urban areas, using shared sanitation has significantly increased during recent years (WHO & UNICEF 2010). According to this report, in 2006, 15% of the urban population in developing countries was using shared sanitation. Amongst the sub-Saharan urban population, the proportion was a much larger 31%.

While the JMP acknowledges the importance of such toilets compared to no facilities at all, it considers the safety and health risks and lack of cleanliness of shared facilities to be too high to be considered as 'acceptable'. The risks of over-use, bad management and low maintenance of shared toilets result in unhygienic facilities and represent a health hazard (Allen et al., 2008) and the risk to the security of women and children is cited as well in the JMP reports.

Boadi and Kutinen (2005) found in Accra that there was a significant association between access to a toilet facility and the incidence of diarrhoea in multivariate analyses, particularly for poor children using facilities shared by more than five other households. Gűnther et al (2012) compared cleanliness with rates of sharing and noted that below four households per stance, the cleanliness of shared latrines were comparable with private facilities (about 80% were clean), whilst above 10 household per stance the proportion of clean toilets dropped to 40%. Users (especially private owners) accepted a lower standard of cleanliness compared to a more objective observer.

However, according to ICDDR-B (2008), cited by Luyendijk (no date), the superiority of private facilities over shared facilities is not definitive, with a study in Bangladesh finding that 50% of improved single household latrines had faeces visible on the slab versus 65% of shared facilities. Luyendijk stated "a [unpublished] literature search did not yield much empirical evidence that shared sanitation facilities are less well maintained than single household facilities". He also did not find conclusive evidence that shared sanitation facilities are less hygienic than single household facilities.

So,

> "it is recognised that some proportion of … shared sanitation facilities are likely to provide comparable benefits to the use of an improved sanitation facility by a single household, for instance use of a shared facility by several households from an extended family group, or use of a clean and well-maintained public toilet" (UNICEF & WHO 2010).

Shared sanitation is common in urban areas of developing countries, but "not incorporated in conscious planning" (Schaub-Jones et al. 2006). Despite such coverage, the position of shared sanitation in sanitation literature is marginal. Most researchers who do talk about it either focus on successful case stories such as Sulabh or SPARC (Burra et al 2003) or WaterAid in Dacca (Hanchett et al. 2003) or mention it as an example when debating other issues such as gender (Allély et al. 2002), the right to sanitation (COHRE et al. 2007) or health (Timæus et al. 1995). Standard textbooks on urban sanitation often mention shared facilities as a solution in specific cases (Mara 1996; Tayler et al. 2003) but do not provide much detail. Some recent reports highlight communal solutions such as SPARC or Ekotoilets or the development of models targeting landlords (Peal & Evans 2010; WSUP 2011) but neglect other options such as informal sharing at household level.

Figure 2: Shared saniation varies in quality (photo credits A Naranjo; Cape Town, South Africa (top) B Reed Nairobi, Kenya (bottom))

Successes in shared sanitation such as Sulabh do "hygienically separate human excreta from human contact". By 2009 this organization had built over 7500 public latrine blocks in 1147 Indian towns (Sulhab International 2011), but these are not considered "improved" facilities. They meet many of the aims of sanitation such as disease control, economic development and environmental improvement, but fall short of the internationally agreed standard.

Options developed do not always reach the poorest or the most vulnerable. Urban dwellers cope with daily sanitation challenges by developing their own solutions, adapting and mixing planners' solutions. Some options are widely used but little is known about their mechanisms and their acceptability. The academic and professional worlds seem to ignore the reality of some urban sanitation options. The need for investigation, questioning the acceptability and appropriateness of shared sanitation in low income urban areas has been recognized with Van der Hoek *et al.* calling for "evidence-based maximum of the number of households using one improved sanitation facility" (2010, p. 48).

The need to categorise shared sanitation

Although shared sanitation is not classed as "improved", it is used both formally and informally as it is several steps up the sanitation ladder from open defecation. It is currently the only pragmatic solution in many densely populated informal urban areas. The single category of "shared sanitation" covers a wide range of options that are poorly understood, from over-used and poorly maintained public latrines in a market to a clean and private latrine shared by two neighbours. By understanding the aspects of shared sanitation that contribute towards sustainable access to sanitation, a more nuanced distinction can be made between acceptable and unacceptable shared sanitation (figure 2). This will enable the focus to be on areas of real sanitation need rather than improving already acceptable facilities.

An implementation process for shared sanitation

(Shared) sanitation facilities are often developed without a full appraisal of all the various options (e.g. in terms of access or management) being fully considered. This contributes to facilities not being used and the relatively high levels of open defecation amongst poor urban communities – 21% in the poorest income quintile in Sub-Saharan Africa, (UNICEF, JMP, 2012). An outline shared sanitation implementation process is presented in Figure 3.
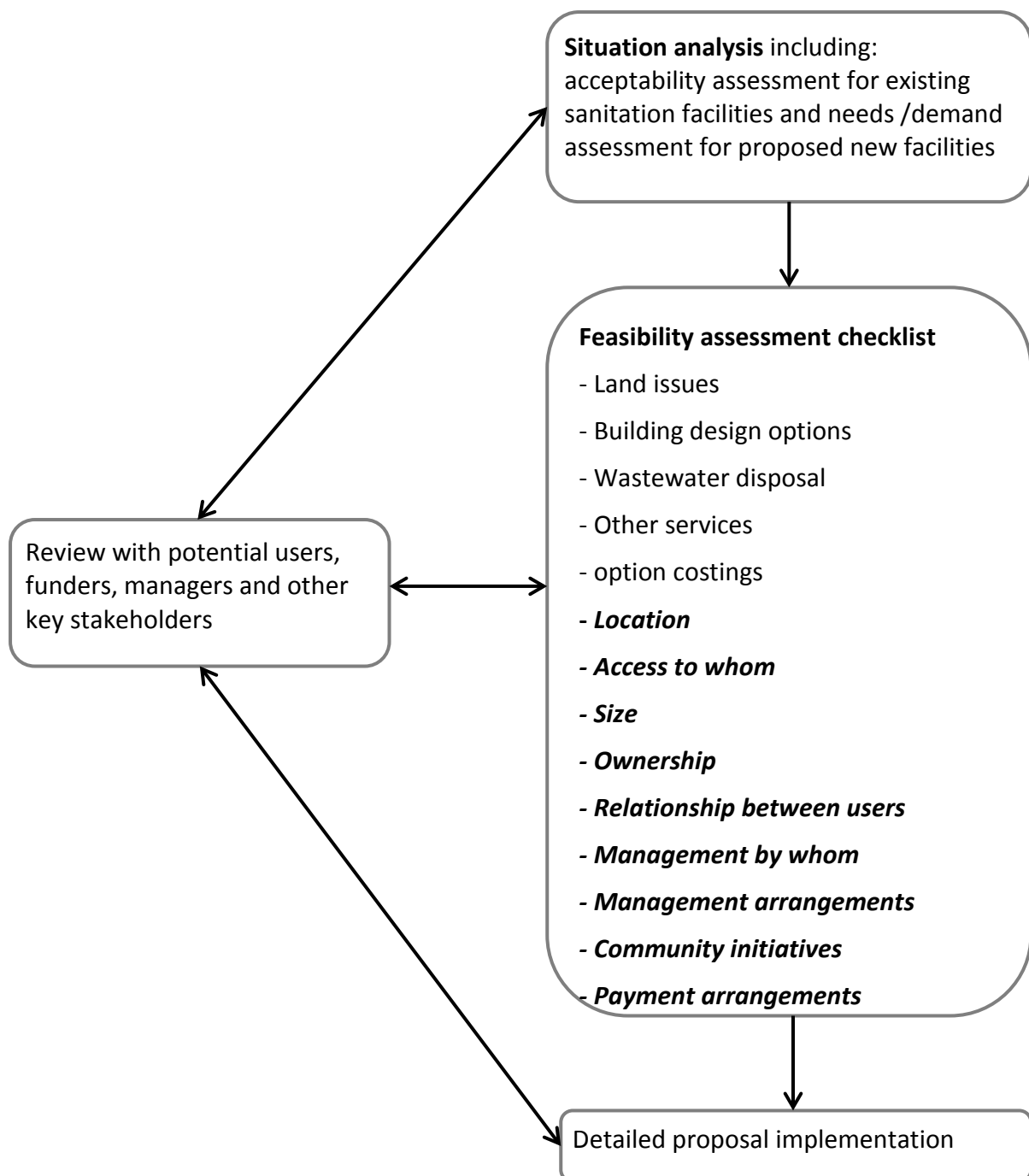
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                                    │ Situation analysis including:│
                                    │ acceptability assessment for │
                                    │ existing sanitation          │
                                    │ facilities and needs /demand │
                                    │ assessment for proposed new  │
                                    │ facilities                   │
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Situation analysis including: acceptability assessment for existing sanitation facilities and needs /demand assessment for proposed new facilities

Feasibility assessment checklist

  - Land issues

  - Building design options

  - Wastewater disposal

  - Other services

  - option costings

  - *Location*

  - *Access to whom*

  - *Size*

  - *Ownership*

  - *Relationship between users*

  - *Management by whom*

  - *Management arrangements*

  - *Community initiatives*

  - *Payment arrangements*

Review with potential users, funders, managers and other key stakeholders

Detailed proposal implementation

Figure 3 - Outline shared sanitation implementation process

The process in figure 3 emphasizes the importance of doing a thorough situation analysis prior to sanitation project design and the need to consult potential users, funders, managers and other key stakeholders, at key stages of the project development. Once a decision has been made to develop a project proposal for sanitation, it is important that the feasibility assessment be comprehensive considering key issues. In addition to the usual (technical) building design options, a range of neglected key themes are presented in bold in Figure 3, that need to be assessed, such as location, access to whom, ownership, management and payment arrangements, that are important for longer term sustainability. This paper focuses on identifying the different typical categories or options that should be considered, under each of these themes.

Methodology

This paper is part of on-going research into the provision of sanitation in low-income countries. There are numerous competing models of sanitation provision (Peal et al 2010) that could have provided a conceptual framework, but each tends to favour a particular approach, such as using economic or social drivers, human health or environmental impact. None of these specifically addresses the issue of shared sanitation. No one model was robust enough to support an hypothesis that could explain the factors that make some types of shared sanitation acceptable. A deductive approach was rejected in favour of an inductive approach, using the available data. The inductive process starts with no fixed theoretical model, but uses the available data to explore and describe the various facets of shared sanitation and look for patterns that can be applied generally, rather than imposing a predetermined framework. The relatively small amount of literature in this field made this approach viable.

The information available was mostly secondary sources reporting on case studies, in the form of published papers and grey literature including project reports and with some primary personal experience and communication. The body of literature was limited and of varying quality, being dominated by project reports rather than explicit research, so a formal systematic review was not deemed appropriate. The majority of the citations in this paper therefore constitute a research dataset rather than references for a traditional review of literature.

Although the quantity of publications was relatively small, the lack of an established body of literature also meant there is no generally accepted terminology. A range of synonymous keywords was used to ensure that a variety of views were captured, for example "toilet/ latrine" and "communal/ community block/ public/ shared/ household shared". The need to include practitioner reports and considerable grey literature further complicated the search for relevant material, as they are not included in standard academic databases.

The dataset was ~~analysed~~ assessed by searching for suitable indicators that appeared repeatedly across the various case studies. The issues, categories and classifications raised by the original author(s) were grouped together to establish if there were any clear patterns in the data.

Choosing indicators

The MDG targets are examples of SMART indicators (**S**pecific, **M**easureable, **A**chievable, **R**elevant and **T**ime bound). The presence of a latrine is measureable, but does not mean that it is hygienic, accessible to all or even used. There are many examples of "technically good" water and sanitation services that are not used (such as the VIP latrines mentioned above), making their impact minimal. Indicators can be classified in various ways (Segnestam 1999; PDG 2004), for example relating to:

- **"Input"** to monitor the specific resources provided;
- **"Process"** to describe how these inputs are used;
- **"Output"** to measure goods and services provided;
- **"Outcome"** to measure the immediate or short-term results of implementation; and
- **"Impact"** to monitor the longer-term or more pervasive results.

So "inputs" may be the provision of latrines slabs, "process", the way they are constructed (e.g. volunteer labour, paid contractors), "outputs" the number of latrines built, "outcome" being the number of latrines being used and "impacts" the decrease in diarrhoea or increase in economic activity. Inputs are normally clear, but measurement of impacts is less straightforward.

The criteria for selecting good indicators are (ibid):

- direct relevance to objectives;
- alignment, so different users can exploit the same data;
- limitation in number;
- regular refinement and incremental approach for changing contexts;
- availability and accessibility;
- clarity of design;
- feasible collection methods and realistic costs;
- clear cause and effect links;
- high quality and reliability;
- appropriate spatial and temporal scale; and
- targets and baselines (measurements before, during and after any intervention).

Where there are many indicators, there can be a few core, key indicators supported by a larger number of peripheral indicators that may not be relevant everywhere. Some indicators are "pragmatic" and can be collected whilst others are "ideal" and would require investment to enable them to be collected. "Proxy" indicators may be used when direct measurement is not feasible. For sanitation, the presence of a latrine (an output indicator) is often taken as a proxy for its use (an outcome indicator), but this is not always true.

Sanitation indicators

The JMP approach is questioned by many authors (Satterthwaite 2003; McGranahan 2007; van der Hoek *et al.* 2010). The first critique focuses on the different definitions used to characterize sanitation. Different studies in East Africa highlight this, contrasting the "improved" sanitation data used by JMP and the "adequate" sanitation data used by UN-Habitat (van der Hoek *et al.* 2010). The difference in the terms used can have dramatic consequences for the resultant figures: "*For instance, 50–60 per cent of the urban population in Africa lack <u>adequate</u> provision for sanitation, more than three times the number lacking 'improved' provision*" (Hansen & Bhatia 2004, p. 26).

Another critique relates to the idea of coverage. Coverage is a statistical figure based on the number of latrines per head of population or household within an area. Gonzales (Godfrey & Gonzales 2010) argues that usage rather than coverage will be more significant as living near to a facility does not mean that you can or want to use it. Simply counting the facilities is not enough so the frequency of use, the frequency of cleaning, the cost and ease of access should also be included in the statistics (Hewett & Montgomery 2001).

Agreeing to those arguments, Satterthwaite (2003) questions the quality and therefore the utility of such statistics. For him these statistics are "dubious" because the definitions used are themselves "dubious". Because the indicators used for these statistics are "simplistic", decision-makers may be tempted to target short-term objectives, such as implementing latrine building programmes rather than longer-

term hygiene promotion. Using these rather simplistic indicators may lead to short term strategic choices that jeopardize future sustainability (van der Hoek *et al.* 2010).

A typology based on technology and construction is of little use when trying to assess coverage and use of facilities. Alternative descriptors are required, especially for the neglected area of shared sanitation facilities.

Working definitions

General classifications of urban sanitation options exist (IWA Sanitation 21, 2006; Tilley *et al.* 2008) but most of them are based on technological or financial criteria. Following a technological perspective was not seen as productive, as the facilities can already be easily divided into improved and unimproved depending on the type of latrine. Unimproved facilities remain unimproved even if they are not shared, whilst technologically adequate systems become classed as unimproved once they are shared.

A common method of distinguishing between types of shared sanitation is to look at the user groups (WSUP 2011, p. 1):

- *Household toilets are used only by a single household, typically a single family or extended family. However, facilities classified as "household toilets" often serve very large households, or they may be regularly used by neighbours. So the boundary between household toilets and shared toilets is not clear-cut.*
- *Shared toilets are shared between a group of households in a single building or plot. This can cover very different situations: for example, a toilet shared by 20 tenant families each occupying one room in a large building or a toilet shared by 3 related families living within a single plot or compound.*
- *Community toilets are shared by a group of households in a community. In some cases each household will have a key to one of the toilets within a block: this may be one toilet per household or one toilet for a group of households. Communal toilets may be owned by the group of households.*
- *Public toilets are open to anybody, in public places or in residential areas: typically there will be a charge for each use. Sometimes each user pays for a monthly ticket. Users of public toilets will generally feel less "ownership" than users of communal toilets.*

Issues of ownership and payment are also mentioned in each of these classes. Quicksand (2011) identified four criteria which they grouped into three classes, based on Indian cities (figure 3), but they considered some shared sanitation as "private" if the user group was restricted.
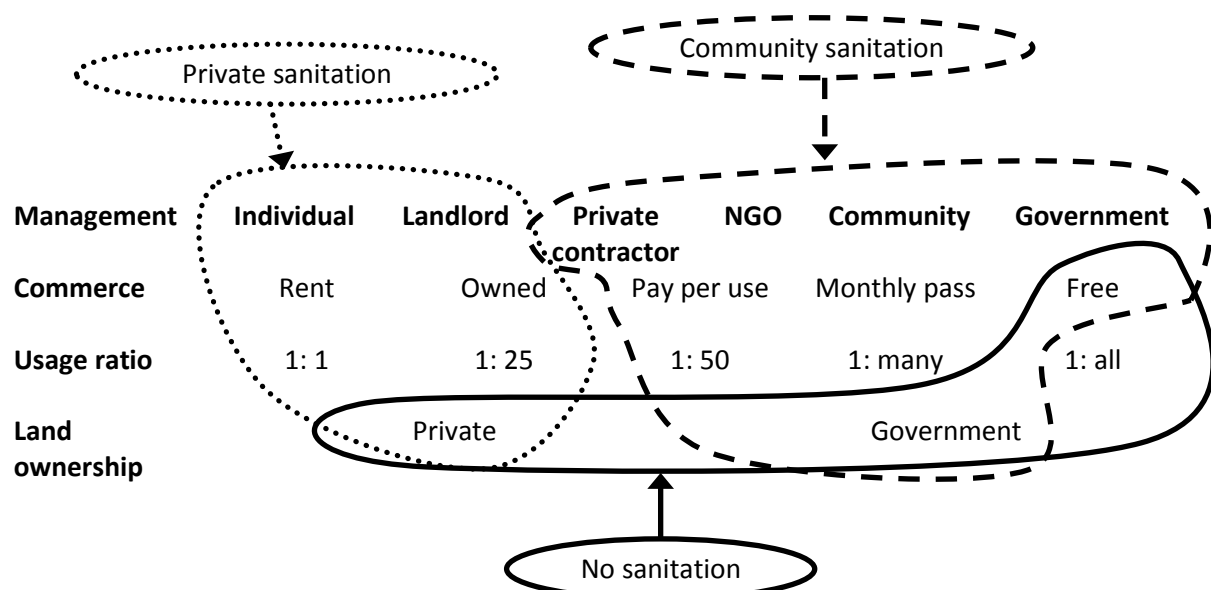
Private sanitation

Community sanitation

Management	Individual	Landlord	Private contractor	NGO	Community	Government
Commerce	Rent	Owned	Pay per use		Monthly pass	Free
Usage ratio	1: 1	1: 25	1: 50		1: many	1: all
Land ownership		Private			Government	

No sanitation

Figure 4: Sanitation spectrum (based on (Quicksand 2011))

For the purposes of this study, shared sanitation was taken to mean any sanitation facility that was used by more than one household, but not facilities whose primary purpose is to serve a public area such as a market or bus station. Both of these boundaries are not fixed as the definition of a "household" can be problematic when extended families live in close proximity or households are defined by social ties that do not relate to being a close blood relative. A single household may live in more than one building or several distinct households may share the same building (Schwerdtfeger 1982). Public toilets at markets and bus stations may be the prime sanitation facility for people living locally.

A multi-sectoral institutional environment

The provision of sanitation services is characterised by a wide range of stakeholders and by a poor understanding of the responsibilities of each of these actors, which results in a lack of coordination of the whole sanitation sector (Mulenga *et al.* 2004; Konradsen *et al.* 2010). The trend towards increasing decentralisation in Africa increases the numbers of actors, private, public and informal, involved in sanitation services (Foster & Briceño-Garmendia 2010). Each group of implementers, urban planners or academics is likely to elaborate their own criteria based on their specific background, interests or the implications to sanitation provision. This fragmentation of roles in the sanitation sector may extend to household level (Schaub-Jones *et al.* 2006), where women are often more concerned with the maintenance of facilities and men with construction.

Categorizing shared sanitation

The following sections examine different indicators or themes identified in the literature that have been used to categorize shared sanitation.

Location

From a user's perspective, the use of sanitation facilities is tightly linked to its location. The distance between the home or workplace and the sanitation facility will play a key role in the ease of use (TARU & WEDC 2005). Three main geographical locations can be identified:

- the dwelling or the compound;
- the neighbourhood; and
- public and communal areas (Schaub-Jones *et al.* 2006).

"Level" of facility (rather than level of services) is used by Schaub-Jones *et al.* (2006, p. 5) to define if population is using household, shared or communal facilities, similar to the WSUP categories quoted earlier. This has connotations of not just the physical location but also to the management and the users, as either the management and/ or the users may be restricted to people living within the same household, within the same neighbourhood or within the same community, each of which require defining (figure 4).

Whilst access to sanitation services and facilities are often considered to be an issue for individuals, the consequences of poor access concern the neighbourhood and wider community (Surjadi *et al.* 1994). Therefore there can be different views between the level of intervention and the level of access, with the level of intervention referring to the institutional or social group that initiates a sanitation project (providing finance, construction; management or maintenance) and the level of access referring to the daily users of the facility. Furthermore (taking the hypothesis that environmental space is socially constructed (Pellow, 2001)), the notions of public spaces, neighbourhoods and private spaces have different meanings in different societies.
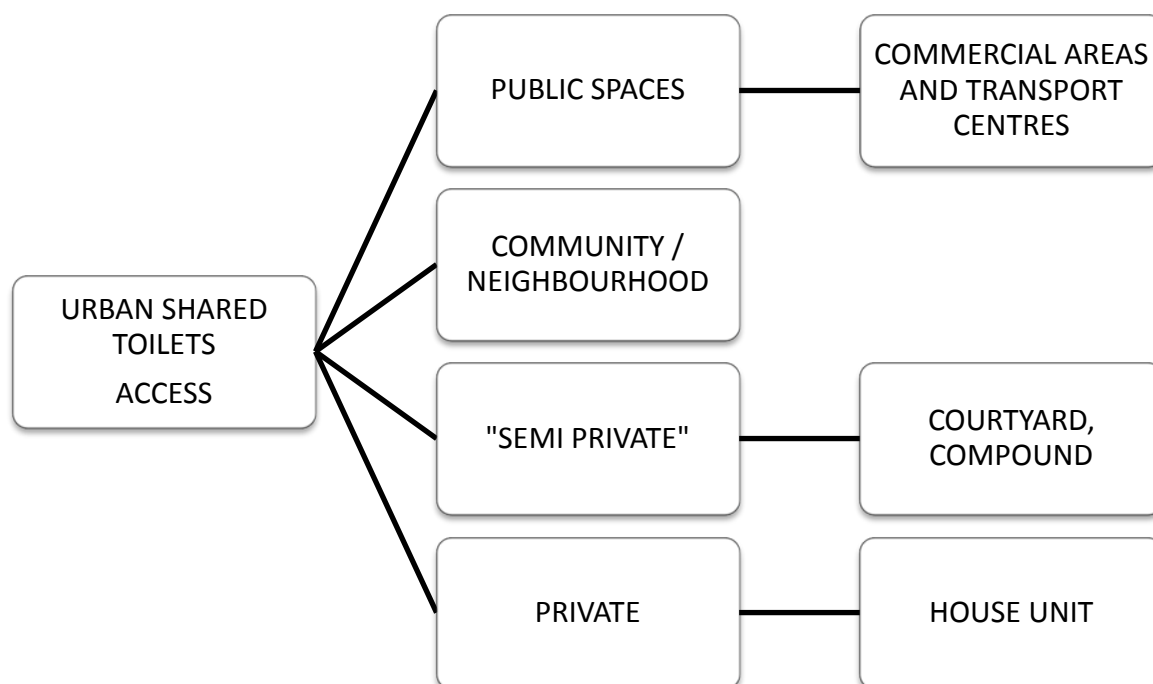
Figure 5: Categories according to location

Accessibility

Distance is only one factor determining accessibility; this can be modified by the physical access to the facility (Hunt, 2001), perceptions of safety, cleanliness (van der Hoek *et al.* 2010), cultural barriers and the cost of services. People with restricted physical mobility may have fewer options (Jones & Reed, 2005).

The cultural and social representation of the public space may in several contexts govern the use of communal facilities (Guijt & Shah 1998; Quicksand 2011). Social norms may restrict movement, for example in areas of northern Nigeria where men, children, unmarried girls and post-menopausal women have greater freedom of movement than married women, who have to remain at home in seclusion (Robson 2000), only venturing out occasionally after dark. Shared facilities may have limited opening hours, especially if manned by a caretaker. Shift workers may need to use the facilities when the attendant has gone home for the night.

Restricted user access

Depending on its location and any agreements made, the facility may only be used by a restricted population (Hunt 2001; Allély *et al.* 2002). This will be influenced by ownership and management and will be manifested by the way access is controlled or charged for. Thus in the case of community toilets, access might be free or be covered by a monthly fee for members of the community but more expensive for visitors, who may be charged per visit. Figure 5 illustrates the range of categories.
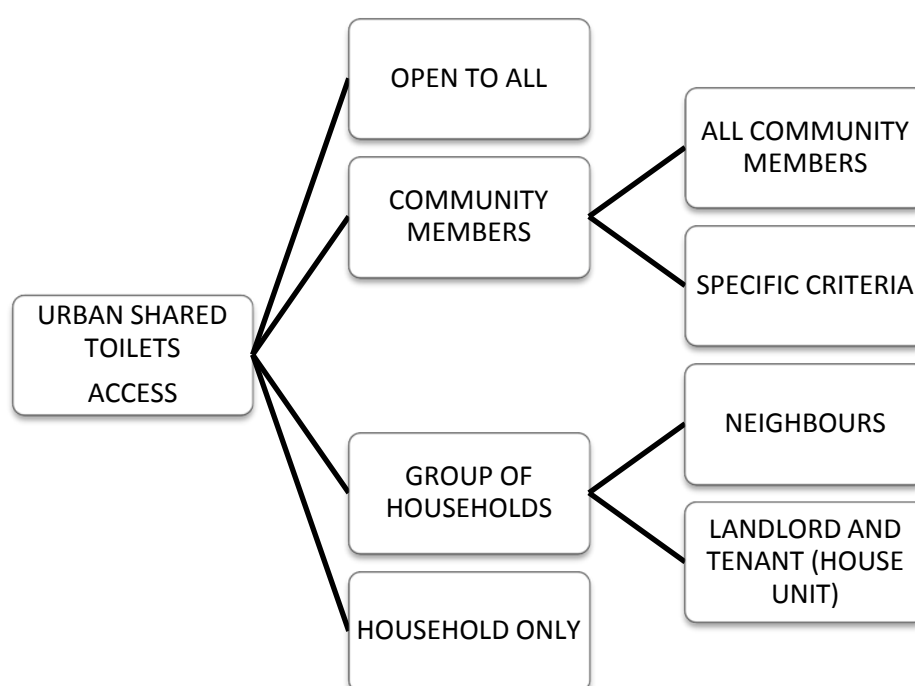
Figure 6: Categories according to access to whom

Public toilets should by definition be open to anyone; but socio-cultural aspects such as gender, disability, religion and affordability might constrain this access. Often the attendant or caretaker of the toilet will decide on access for any individual. In the case of household sanitation, the keys of the toilets will be shared between a group of households. Access is then managed by the households or the landlord (figure 6).

Figure 7: A toilet block with one cubicle for the landlord and two for tenants (Photo credit G Mikhael, Freetown, Sierra Leone)

Specific coverage

Access also relates to the number and variety of people who use the facilities, with a small number of the same people repeatedly using household shared toilets and a large number of different people sporadically using more public facilities. Besides the number of users, there is also the issue of who are those users, as sharing with people you know may make community management more appropriate (figure 7). In public toilets, open access makes sharing responsibility less applicable. At a local level, the concept of a household is rather fluid, with a single "family" living in several separate buildings, or a single building housing an extended group of relatives, rather than just immediate family. Shared cooking or a single head of the household may define the household or family unit rather than the buildings they occupy.
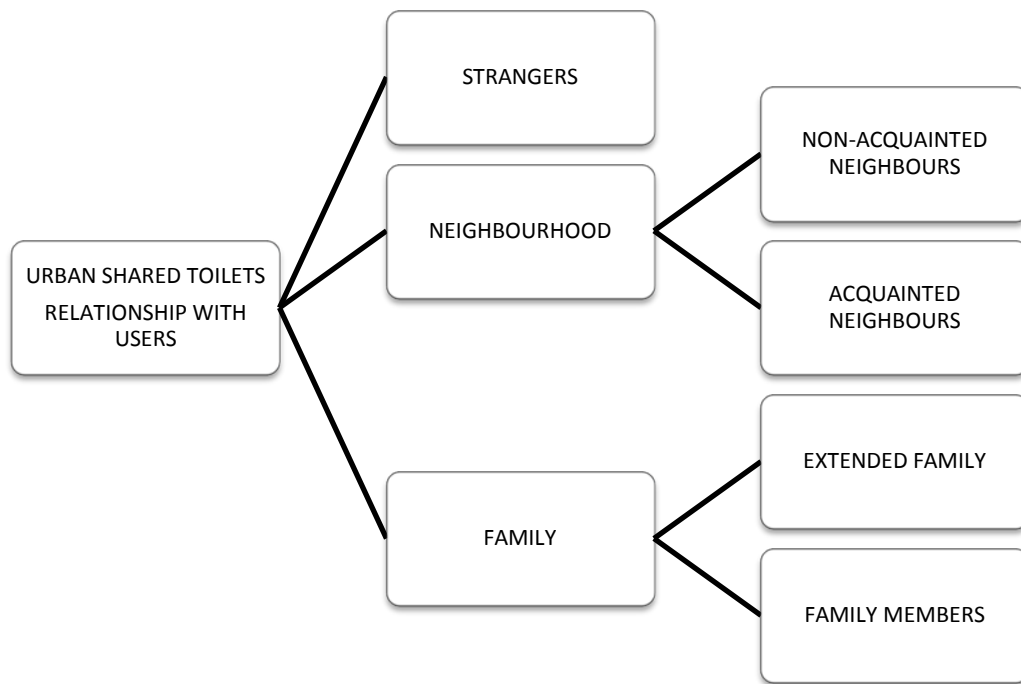
Figure 8: Categories according to relationship of users

Size

Although most technical considerations were excluded from this review, as the JMP already distinguishes between improved and unimproved, some physical factors need to be considered. Size and layout will determine the services offered by the facility, in terms of quality and quantity. A public toilet could be a simple single urinal or a large community block consisting of twenty cubicles each for men and women (Burra et al. 2003). Larger facilities can include stalls specifically for children (see figure 8) and provision for disposal of menstrual hygiene waste. The number of cubicles and number of users per cubicle will have consequences on the time spent queuing and difficulty of maintaining the facility (Hanchett et al. 2003). Large sanitation blocks can provide better services and be more cost effective, but will increase average distances, compared with many smaller toilets providing the same coverage.

Figure 9: Girls' toilets in community run block (photo credit B Reed, Bhopal, India)

Communal facilities are likely to have a high number of cubicles. Household shared facilities may have up to two or three cubicles. Some community toilets managed by households are reported to have 20 cubicles, each of them shared by 20 households (Wegelin-Schurinda & Kodo 1997).

Providers of urban shared sanitation services

Prompted by the MDGs, emphasis is being placed by governments and NGOs on providing sanitation. As many low-income settlements are unplanned, informal or even illegal, official provision of facilities can be problematic. In informal and low-income settlements the notion of urban planning itself is blurred (Rakodi 2005), therefore most of the sanitation initiatives do not fit in a wider planning picture but are the result of individual initiatives (Jenkins & Sugden 2006). This absence of planning is often the consequence of a political drive to keep these areas less attractive to people moving into the cities and slow down urban migration, although this has been proved ineffective (McGranahan 2007).

It is often the informal sector that is in charge of building individual toilets, managing ablution blocks or emptying individual and shared facilities (McGranahan 2007). Public authorities are rarely involved and often ineffective in providing these sanitation services (Moran & Batley 2004). As an example, in illegal settlements of Zimbabwe, South Africa or Zambia sanitation services are only provided by NGOs (Mulenga *et al.* 2004)..

Figure 9 illustrates the large range of potential providers of shared sanitation such as (Collignon & Vézina 2000; Moran & Batley 2004):

- a family informally sharing their toilet;

- a group of families informally sharing their toilet;
- landlords;
- an individual or group of individuals providing access to a pay facility;
- CBO or NGO providing (free or not) access to toilet;
- private company managing a facility;
- public company managing a facility; or
- any combination of the previous examples (Figure 10).

Ownership

It should be noted that decisions about implementing and accessing a service may not be always in the hands of the community or neighbourhood but in the landlords' control (Eales & Schaub-Jones 2005; Rheingans *et al.* 2009). The notion of ownership might be context specific with the ownership of the land, the facility and the operation considered separately (Schaub-Jones 2005; Colin & Nijssen 2007). This is complicated by differences between legal land ownership and rights established informally in a slum. Besides the various categories of ownership, such as commercial, private or community, there is also the consideration of the sense of community ownership by the users, a discussion often seen in the case of communal blocks managed by CBOs.
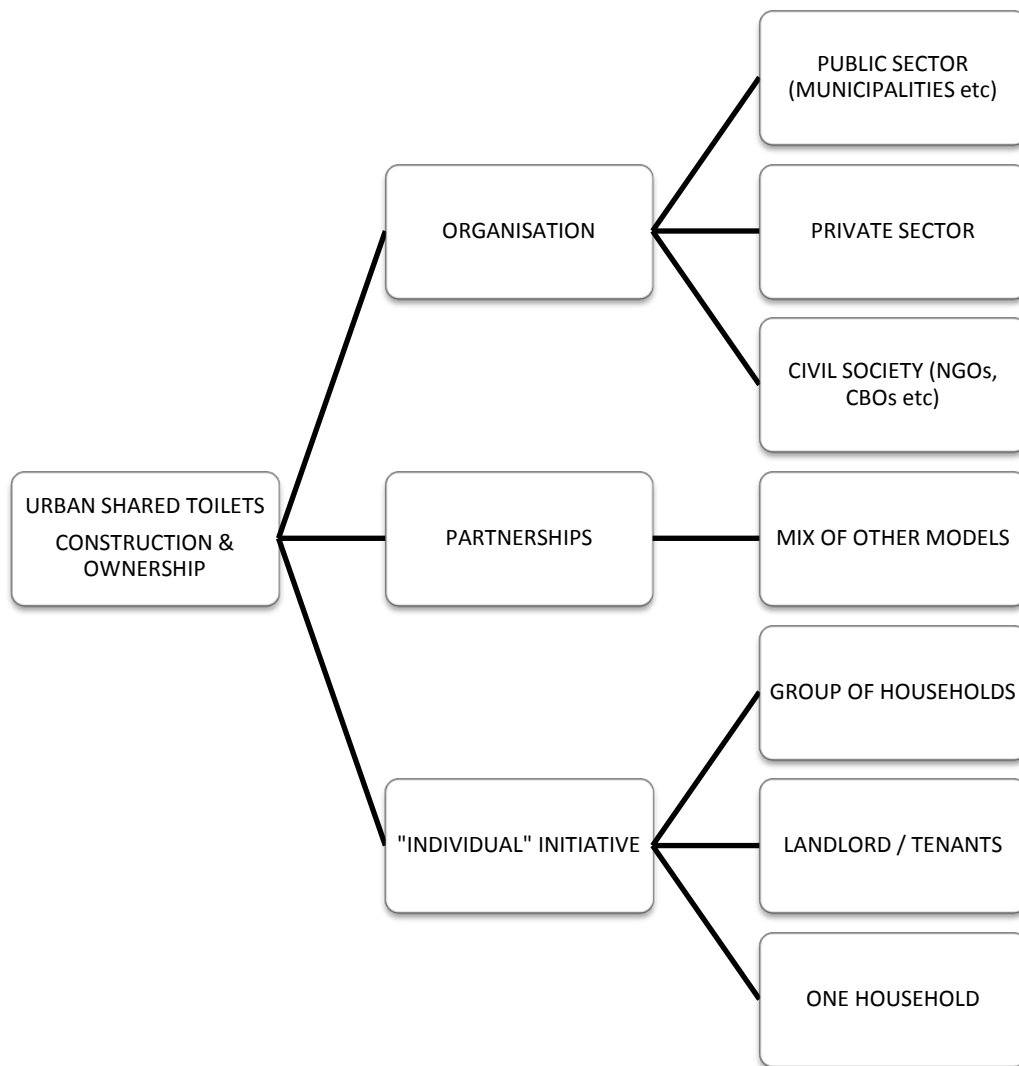
Figure 10: Categories according to ownership

Figure 11: Facilities can be provided by partnerships (photo credit B Reed, Kolkata, India)

Management

Just as there are different levels of users and implementers, from individuals to larger community based entities, a similar pattern can be seen with the organizations charged with daily management (Hobson 2000; Allély *et al.* 2002; Hanchett *et al.* 2003). An organization at one level can provide a service (figure 11) and another organization at another level actually running it (figure 12). Initial capital costs may be covered by private funds, municipal agencies or donors but the running costs will be in the hands of users, either directly to households or through community based organizations (Hobson, 2000; Burra et al. 2003). This relationship between the provider and the operator may be formal, though a leasing arrangement, or handed over and the initial provider no longer being involved.
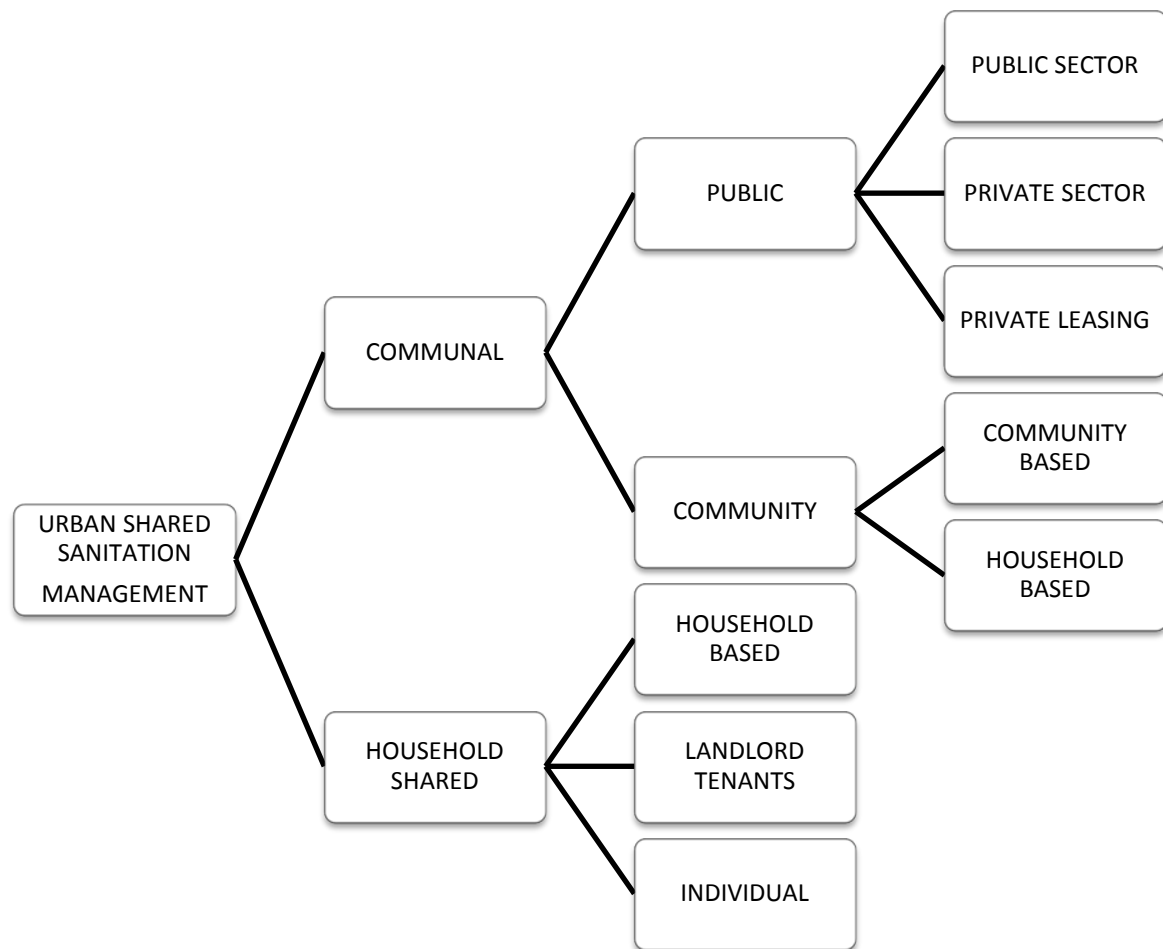
Figure 12: Categories according to management

Community initiatives

A community may decide to work together (physically or financially) to build an individual sanitation system with a common sewage system such as the Orangi Project (Hansen & Bhatia 2004) or may work in common to build and operate a community toilet block (Trecco 2007). The level of intervention and level of access might be the same or different.

It is argued that implementers should focus on groups of households rather than on individual households (Mara & Alabaster 2008), mainly for financial reasons. It would be easier for group of households to pay the connection fee and for a community to build a shared sanitation system than trying to provide individual access immediately. From this shared base of infrastructure services, households can move over time to a more individual system.
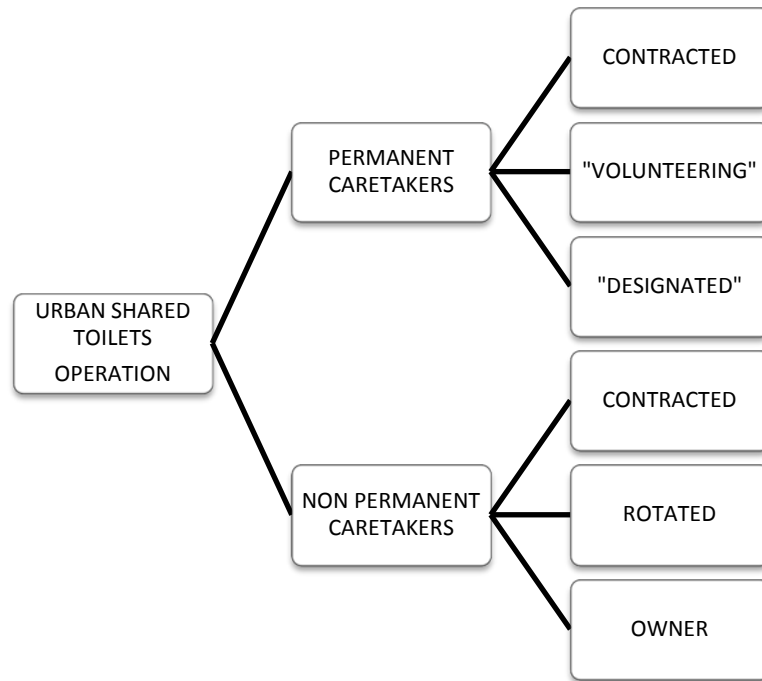
Figure 13: Categories according to operation

Income and charges

Access to sanitation is rarely free of charge. From recouping an individual investment used to build privately owned sanitation to the provision of free at point of use public toilets, a broad range of scenarios exist. Payment can be monthly, on a pay-to-use basis, subsidized for the poorest or as part of the rent for a house. In communal facilities, charges can be different for men or women and for urination or defecation. The amount and method of charging will influence how users interact with the facility, in terms of access, use and concepts of ownership (figure 13).

Income comes usually from users' charges (figure 14) but can also be made through parallel services like provision of drinking water, showers (Burra *et al.* 2003), through advertising on the walls of the facilities (Colin & Nijssen 2007), through renting out rooms above the toilet block (Trecco 2007) or by generating biogas from the waste.
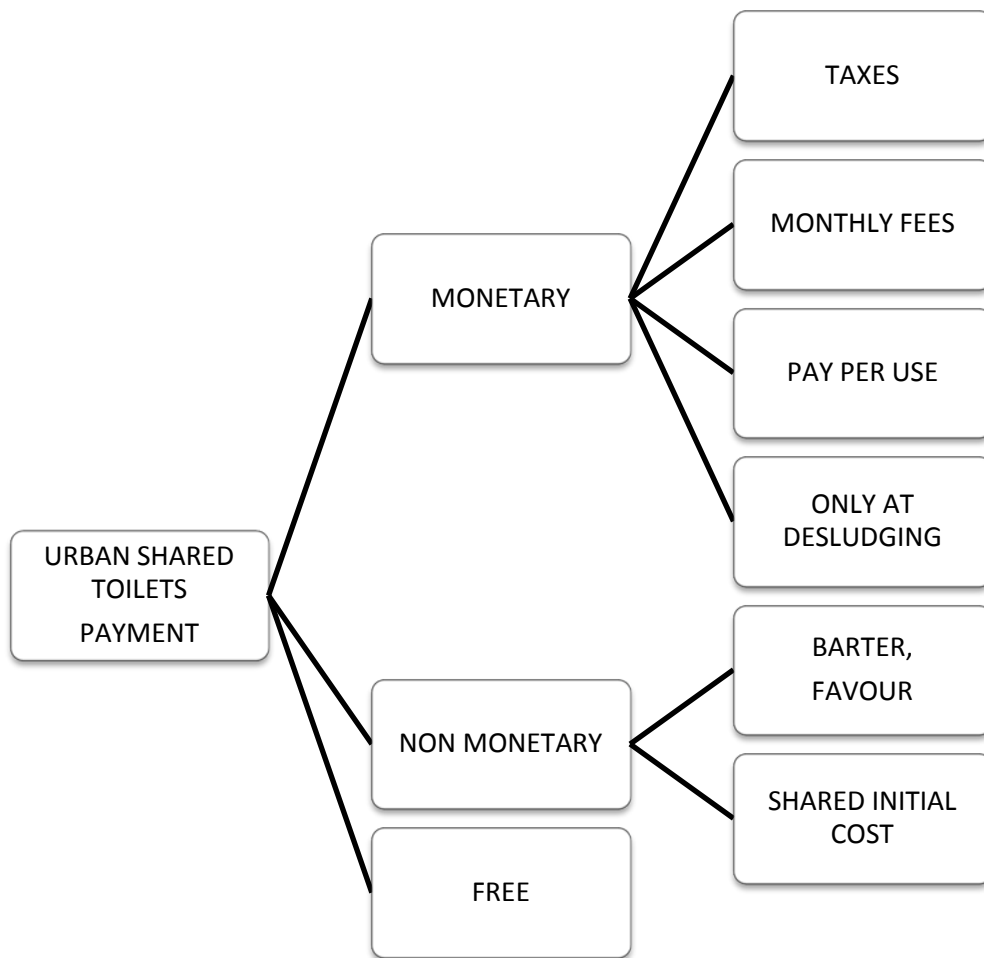
Figure 14: Categories according to payments

Figure 15: Commercially run sanitation block (photo credit A Mazeau)

Discussion

General classification

Each of the individual classification criteria identified has a range of values. Initial analysis attempted to bring these together to see if there were any patterns, using various case studies to validate the resulting model. This resulted in some general trends, such as larger units having more cubicles, formal ownership patterns and pay-as–you-go options compared with household level latrines being one or two cubicles, owned by householders or landlords and charges being included in rent or on an informal cost-sharing basis. In the middle are community-run latrines, with several cubicles with cost recovery on a monthly basis. However there were exceptions, with privately run single cubicles charging per visit and community-run public toilets operating on a large scale. Rather than a single dimension, based on "level", the real pattern is multidimensional, with each of the above categories having a spectrum of values (table 1). The distinctions between categories are based on the authors' perspectives and other researchers may combine some of these into one parameter or split them into two or more subsections. Some dimensions may be considered more (or less) important by certain stakeholders but no consensus is apparent, with specific features being important in particular contexts. These may be broad (e.g. parameters important in South Asia are not relevant in Sub-Saharan Africa) or very local (e.g. relating to caste or ethnicity).

Table 1: Typology of urban shared sanitation

	Communal toilet facilities				Household shared toilet facilities			
	Public toilet facilities			Community toilet facilities				
Location	Town centre, stations, markets			Neighbourhood			Backyard, compound	
Management model	Public sector management	Private sector development	Private leasing	Community-based	Household(s)-based			Private
Ownership	Municipal agencies	Private	Municipal agencies		Municipal agencies	Group of households	Individuals	Landlord
Access	Open			Community members	Group of households		Group of households	Tenants
Charges	Various	Yes		Yes, (subsidies?)	Shared between households/ Pay per use….		Yes	Yes
Payment mode	Pay-and-use/ taxes	Pay-and-use		Pay-and-use/ Monthly fees			Pay per use / non-monetary	Tenancy
Construction			Municipal agencies	Donors, municipal agencies	Municipal agencies, CBOs, group of households			Agreement landlord / tenants
Operation & maintenance	Municipal Agencies	Private sector	Private contractors, individual	CBO, NGO, urban poor federation, women's cooperative		Group of households	Individuals / owner	
Permanent caretaker	Various	Yes		Yes	No		Various (member of household)	No
N° of cubicle / facility	Mostly over 10 cubicles			Various			<3	
N° of users	Between 500 & 1000 users /facility /day			<500 users /facility /day	3-4 households /cubicle	10-20 households /cubicle	≈ 2-10 households	

Classification as a process

Practical use of indicators entails a limited number of measurements, so this plethora of minor distinctions, while providing important detail, was not ideal. However, although the final categories may be too finessed, the process of assigning a category enables decision-makers to examine a range of criteria, rather than just focussing on a few simplistic parameters. This moves the process to being a checklist of issues to consider during the implementation of a shared sanitation scheme, with a wide spectrum of options rather than being constrained by a few standard models. This is emphasized in Figure 4, where the checklist themes discussed in this paper are placed in a broader shared sanitation development process. Identifying a range of patterns and options can increase the awareness and legitimacy of some options, such as sharing between neighbours, or enabling community toilet blocks to meet the needs of poorer members of communities.

Alternative sanitation perspectives

The selection of parameters identified from the literature reflects the interests of the stakeholders writing about shared sanitation in low-income settings from a project-based, implementation perspective. In contrast to this set of (urban, slum, shared sanitation) stakeholders, there are other distinct sub-sets of researchers looking at the provision of low-cost sanitation for other perspectives. These include:

- Resource-orientated sanitation, such as ecosan (composting latrines), where key indicators in the past have focused on the re-use of excreta;
- Market-based approaches, where latrines are sold to individuals using social marketing techniques, so key indicators relate to product, price, place etc.; and
- Community–Led Total Sanitation (CLTS) where whole communities are encouraged to construct their own latrines and the key indicator is no open defecation.

The first two options are less applicable to the dense urban slum context in question, as reuse is currently mostly a rural option and marketing approaches target individuals rather than shared options, so these sources were not consulted to any great extent. CLTS does encourage the use of shared sanitation, as an early step on the sanitation ladder and from its rural roots is now being trialled in urban settings. Being a community-led rather than a donor or NGO-led process, the defining characteristics of improved sanitation differ from more technical approaches.

Input or outcome?

Reviewing the parameters identified, many of these relate to inputs (such as the type of promoter), processes (such as land acquisition) or outputs (such as coverage). Impacts, such as improved health, are very difficult to attribute to sanitation (WELL 1998) but CLTS programmes often suggest "no smell, no flies" as an indicator of adequate sanitation. Evidence from the CLTS literature also hints at longer-term indicators. Whilst most of the focus within CLTS is on the absence of open defecation, rather than the status of the latrine, there are some definitions (box 1).

Box 1: Definitions used by the community in Chisapani, Nepal

Permanent latrine – pit with concrete rings, slab and pan, superstructure with adequate privacy and roof.

> **Temporary latrine** – pit with bamboo lining. No concrete slab and pan.
>
> **Hygienic latrine** – clean with no flies, no smell inside or outside, excreta separated from human contact and the pit is not full.
>
> The community was of the view that a temporary latrine can be hygienic.
>
> (Jones *et al.* 2009)

The concept of a "hygienic latrine" has moved to an *outcome* rather than the *output* of permanent and temporary latrines. This perspective also differs from the indicators and descriptors found in the review, in that this definition is provided by the *user*, not the provider or external researcher. The CLTS approach emphasizes health, hence the terminology of a hygienic latrine. This still may not be adequately private, sustainable, manageable, culturally appropriate or affordable and may not be used. "Basic", "improved" and "adequate" have to relate to the user's perspective; for the users to use (and therefore benefit from) a latrine, the facility has to be *acceptable* to them. The various indicators that have been identified in the literature do not necessarily relate directly to acceptability. It is not clear if management status or land ownership is directly relevant to the user. It is not clear which single factors are more important to users. This leads to a state of relative acceptability for the user based on *all* dimensions rather than absolute adequate/ inadequate states for single parameters.

At the global level, the notion of "improved" sanitation facilities presents significant difficulties when considering the many facets of shared toilets identified by this paper. Monitoring agencies such as the JMP may not have the capacity and the level of data required to analyse and communicate the variety of dimensions debated here. However, they may focus on for instance the number of households per toilet, acknowledging the limits of such an indicator. At a local level however, all dimensions of acceptability should be considered to characterize the existing facilities and distinguish the boundaries of acceptability and viability of future models to be implemented locally.

This research set out to review all available literature on the topic of shared sanitation, to see if any patterns or trends emerged. What has become apparent is a gap in the views of all stakeholders. Chambers (1997) asked "whose reality counts" – a fundamental aspect of development is to engage the users of infrastructure services. Whilst the main factors that concern providers and regulators are apparent from the literature, actually defining what sanitation services are "adequate" can only be determined when the voices of the users has been heard. This requires primary research as it is clear that this perspective is missing from the current literature. User issues that could be examined include costs, cleanliness and design issues such as lighting and privacy.

Conclusion:

(1) In order to meet the challenge of providing sanitation to people in low-income urban areas, shared sanitation is being used as a useful step onto the sanitation ladder, despite the lack of international recognition as "improved" facilities.

(2) Reviewing the current shared sanitation literature, an attempt was made to categorize types of shared sanitation using appropriate indicators. These are mostly input or process indicators, with fewer output or outcome indicators. There is no

consensus on what are the key indicators, although level of provision, management and use are common measurements. There is no widespread agreement about which of the objective indicators identified equate to subjective judgements about the status of the facility as "adequate" or "inadequate".

(3) The parameters used to describe shared sanitation mostly relate to the interests of the provider or regulator. Very few relate directly to the use or user of the facility, a key issue in reaction to the impact of the facility. Whilst user's views on sanitation provision exist generally, no information is available on what makes shared sanitation specifically more or less acceptable to the user. Global coverage figures are based on technical perspectives and the views of the users is necessary to determine what is adequate or inadequate in each context. Providers, regulators and researchers need to engage with the users of such facilities to ensure that they meet user requirements rather than externally determined criteria.

(4) On a wider scale, relying on objective, technical indicators of sanitation provision may provide a numerically valid national picture, but misses the subjective mixed considerations of the user in determining if sanitation, shared or unshared, is in fact acceptable. This will probably result in some currently acceptable facilities being deemed less than satisfactory, but others currently excluded being counted as satisfactory.

Acknowledgements

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Captions

Figure 1. Sanitation ladder (based on JMP 2010)

Figure 2: Shared saniation varies in quality (photo credits A Naranjo; Cape Town, South Africa (top) B Reed Nairobi, Kenya (bottom))

Figure 3 - Outline shared sanitation implementation process

Figure 4: Sanitation spectrum (based on (Quicksand 2011))

Figure 5: Categories according to location

Figure 6: Categories according to access

Figure 7: A toilet block with one cubicle for the landlord and two for tenants (Photo credit G Mikhael, Freetown, Sierra Leone)

Figure 8: Categories according to relationship of users

Figure 9: Girls' toilets in community run block (photo credit B Reed, Bhopal, India)

Figure 10: Categories according to ownership

Figure 11: Facilities can be provided by partnerships (photo credit B Reed, Kolkata, India)

Figure 12: Categories according to management

Figure 13: Categories according to operation

Figure 14: Categories according to payments

Figure 15: Commercially run sanitation block (photo credit A Mazeau)

Table 1: Typology of urban shared sanitation

Box 1: Definitions used by the community in Chisapani, Nepal