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► **To cite this version:**

Adrien P. Mazeau, Brian Reed. Assessing people's views of infrastructure: methodologies to study urban shared sanitation. World Wide Workshop for Young Environmental Scientists: 2010, May 2010, Arcueil, France. hal-00521409

HAL Id: hal-00521409

<https://hal.science/hal-00521409>

Submitted on 27 Sep 2010

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Assessing people's views of infrastructure: methodologies to study urban shared sanitation

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Abstract

Providing sanitation services in low-income areas in fast-growing cities is a significant challenge for urban planners, donors and governments. Making these services sustainable by answering the needs of heterogeneous urban population is a major step to meet this challenge. This paper shows the necessity of exploring users' views when planning sanitation facilities on low-income and high-density settlements. An initial desk based study highlights the multi-disciplinary components of urban sanitation projects and the central role played by the facilities' users. Focusing on shared sanitation facilities, the users' needs and perceptions are at the crossroad of the different dimensions of sustainability. Bringing together assessment practices from social science, engineering and economics leads to new methodologies able to take a multi-dimensional picture of people's practices and needs.

Keywords

Sustainability, people's perception, sanitation, slums, developing countries.

INTRODUCTION

Rapid urbanization, lack of resources from local government and the growing numbers of urban poor, lead to the continuing development of areas characterised by a lack of infrastructure, little institutional recognition, poor environmental conditions and overcrowding. Amongst these characteristics, poor quality and lack of water supply and sanitation facilities is one of the essential aspects defining a slum (UN-HABITAT 2003).

These slums, also called shanties, *favelas* or *bidonville*, are characterized by a high degree of heterogeneity in terms of income, housing and diversity of people (Gilbert 2007). These heterogeneities must be recognized during research and project conception. In order to improve the quality of the sanitation service, it is necessary to bear in mind the physical and institutional constraints as well as considering the users as a central stakeholder. To cope with the lack of sanitation facilities, the population use a range of practices from open defecation to toilet sharing. This paper is drawn from a larger study that aims to develop a better understanding of the factors that influence the acceptability of shared sanitation facilities.

This paper investigates a) the sanitation problems in urban areas and the role played by shared facilities; b) the central role played by the users in the sustainable development of sanitation systems and from these explores c) the methodologies used to anticipate acceptability of future sanitation facilities.

URBAN SANITATION PROBLEMS

The high population density, the lack of financial and institutional arrangements and often the geographical location of slum areas weakens the potential for improving waste management. Amongst these wastes, human wastes remain the most common and the most hazardous considering ease of potential contact (UN-HABITAT 2003). Sanitation, “the safe management of human excreta both on-plot and off-plot” (Pickford 1995), has therefore high impact on health particularly towards urban poor (Satterthwaite 2008). The health of the population, but also the local economy and the civic pride (Pearson & McPhedran 2008) are closely linked to the environmental conditions of the town in general and to the management of appropriate sanitation systems in particular.

Land tenure, space to build, and low incomes constitute some of the main barriers towards access to private sanitation. In this context, the development of shared facilities may provide one solution to improve human waste management in low-income settlements (Wegelin-Schuringa & Kodo 1997, Burra et al 2003, Colin & Nijssen 2007). Shared sanitation is a toilet shared by two or more households (Pickford 1995, WHO & UNICEF 2010). This includes toilets shared with neighbouring households, community blocks, and public toilets.

The Joint Monitoring Programme and shared sanitation

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. This however was a much larger 31% amongst the sub-Saharan urban population.

In 2006, the Joint Monitoring Programme for Water Supply and Sanitation (JMP) did not count shared or public toilets as improved (WHO & UNICEF 2006) because often this form of sanitation does not ensure a good separation between excreta and potential human contacts. The monitoring of improved sanitation as presented by the WHO and UNICEF is questioned (Bartram 2008). A first element of answer relies on who sets the criteria for answers (Black & Fawcett 2008). Public health official will often look at the quality of the excreta containment when users may focus on different issues such as access, cleanliness or convenience.

Facing this definition issue, the JMP has created a specific category to be found between improved and unimproved on the sanitation ladder (WHO & UNICEF 2008). The JMP recognises that many urban households have access to sanitation only through sharing facilities. This location on the ladder is justified by the health perception of these facilities by the users, their security and accessibility. However, this 2008 report states the need for further research focusing on the acceptability of shared facilities.

How are urban sanitation facilities shared?

A desk-based study carried out during the first trimester 2010 highlights the complexity of shared sanitation. The review of around ninety journal papers as well as agency websites shows that any sanitation programme involving a shared use present many divergent patterns ranging from the constitution of the initial capital to the daily maintenance of the facility. Technological options are often applicable to both individual and shared sanitation (Schaub-Jones et al. 2006) and are therefore not directly of concern in this discussion. The different management models of shared sanitation have been characterised using the following criteria:

- **Location** (from a low-income area perspective, three main locations can be identified: the dwelling or the compound, the neighbourhood, and the public and communal areas.

- **Main users** (Neighbours, community members, free at point of use)
- **Level of responsibility** (Individuals, group of households, community based organisations, private companies and municipal agencies all manage sanitation services).
- **Ownership** (The notion of ownership might be context specific and both the ownership of the land and of the facility need to be considered)
- **Income and charges** (Access to sanitation facilities is rarely free of charge, payment can be done monthly, on pay-to-use basis, subsidized for the poorest or as part of the house-renting)
- **Operation and maintenance** (Running costs will often be in the hand of the users via direct responsibilities of the households or through community based organizations)
- **Usual settings** (Number of cubicles and the number of users will have consequences on time to queue and cleanliness)

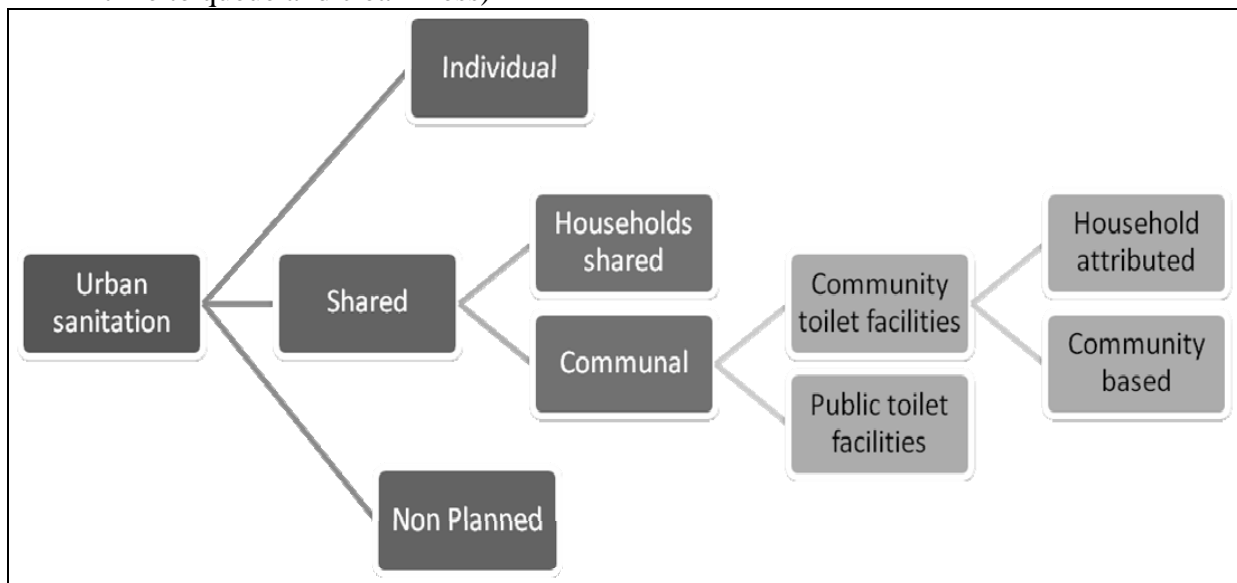


Figure 1: Different management levels of sanitation facilities

The figure 1 shows the range of management of urban sanitation facilities.

Household shared sanitation refers to a toilet shared by several surrounding households (Schaub-Jones et al. 2006) following an agreement between the households themselves or by a common landlord.

Communal facilities include both community toilet-block and public-toilets (Schaub-Jones et al. 2006). **Community toilet facilities** target the need of residential area, often in low-income areas (Schaub-Jones et al. 2006, Colin & Nijssen 2007). Two levels of management of the community-blocks can be identified:

- The community-based toilet is a facility used, operated and managed by members of a community often supported by a local organisation.
- Household attributed toilet or “cluster toilet” (Hanchett et al. 2003) refers to a cubicle used and maintained by a fixed group of households within a community-block located in the neighbourhood.

Public toilet facilities are often located in urban centres or near markets, train and bus stations, or within public institutions (hospital, administration building). Public facilities can be privately run or managed by the municipality (Colin & Nijssen 2007).

What is the place of socio-cultural studies in sanitation sector?

Early social-psychologists pointed to the link between individual perceptions of excreta and social structure (Douglas 1966). The socio-cultural environment where an individual grows-up influences the acceptance of a new sanitation system. Planners before the international water and sanitation decade (1980-1989) considered human behaviour as a potential barrier to project implementation (Wagner & Lanoix 1958, Cross 1985). They gradually tried to adapting the project to the human behaviour (Elmendorf & Buckles 1980). Kalbermatten et al. (1982) recognized early the difficulty to integrate socio-cultural aspects into water and sanitation projects as the use of proper social science tools will be expensive as they will need to be used on a “site by site approach”. Misunderstanding of some social or cultural aspects led to the failure of sanitation projects (Chowdhury et al 1981, Cairncross & Feachem 1993).

During the last decade, relationships between the success of a sanitation project and good understanding of the individual and community sanitation approaches are clearly drawn (Jenkins & Curtis 2005, Avvannavar & Mani 2008). Researchers look at social aspects to discover if new technologies can match existing social needs and social taboos (Dellström-Rosenquist 2005). It is also now stated that socio-cultural aspects are a more powerful driver for sanitation than health (Saywell & Cotton 1998) or the environment (Kvarström et al. 2004).

Studying the feasibility of a sanitation system in Thailand, Schouw and Tjell (2003) define acceptability through two subjective ideas:

- the socio cultural acceptance focusing on the perceptions of the user
- the practical acceptance which is the perception of the user and their behaviour in terms of use of the facility

A similar interpretation is proposed by Kvarström et al. (2004): socio cultural sustainability has to be seen through “cultural acceptance, institutional requirements and perceptions on sanitation” (2004:105). A dimension of time (Cross 1985, Kvarström et al. 2004) is also emphasized, as the acceptability evolved based on both external and internal factors and opportunities (Jenkins and Cairncross 2010).

Why consider the users’ views?

The sustainability of a water supply or sanitation project can be measured only through a range of dimensions. In its research and training programmes, the Water, Engineering and Development Centre (WEDC) uses, amongst others, the “SHTEFIE” model which includes the following aspects: social, health and hygiene, technological, economical, financial, institutional and environmental (Parr and Shaw 1999) . Moving back to urban sanitation, the user is at the corner of the sustainable and positive use of any sanitation equipment (Luthi et al. 2009). People are at the crossroads of these dimensions.

A technically safe toilet might become harmful for the environment if not properly used or maintained. A cheap toilet may not be acceptable from an institutional perspective. An environmentally focussed system may not be used if it is not in accordance with some cultural issues. Considering and understanding the people’s views of a current or future sanitation systems is a key requirement to positively address the different dimensions that lead to sustainable infrastructure (Deakin et al. 2002, Tayler et al. 2003).

METHODOLOGIES

In development programmes in general, and in water and sanitation projects in particular, planners use different tools and assessment methods to study the feasibility of a project. Demand assessment remains the most popular approach to estimate the user’s needs and opinions. The

different demand assessments aim to understand the needs and the wishes of the users or consumers (Parry-Jones 1999). Depending on the researcher’s background, different methods are carried out to assess demand. Table 1 summarizes the economists, engineers and social scientists perceptions of demand.

TABLE 1: Demand and its different views (adapted from Parry-Jones 1999)

	Engineers	Social scientists	Economists
Broad definition of demand for sanitation	Amount of excreta to be disposed	Basic need that must be addressed to any groups	Willingness to pay for a service
Assessment tools	<ul style="list-style-type: none"> • Household surveys • Feasible option studies • Supply norms 	<ul style="list-style-type: none"> • Participatory Rural Assessment • Relative demand 	<ul style="list-style-type: none"> • Contingent Valuation Method • Household surveys

Concerned about people’s views, Tayler et al. (2003) suggest a list of participatory methods that can be used for assessing sanitation situation and should be employed according to the outcomes researched as shown in table 2.

TABLE 2: Methods and expected outputs of participatory assessment (adapted from Tayler et al. 2003)

Method	Expected outputs
Transect walk	Initial impression of sanitation issues and first approach of people’s views
Semi structured interviews Focus Group Discussions Timelines	Understanding the past, present and future events Investigating in more details some specific issues
Questionnaire survey Participatory mapping	Appreciating the present situation including social interactions
Sanitation ladders	Understanding people’s preferences

The quality of the participatory assessment will depend on the activities selected, on the expertise of the facilitators and on the selection of the participants. However, the use of group activities may in some cases weaken the position of vulnerable groups and reduce the reliability of some information (Mayoux 2006). As for other field methods, careful planning, pilot studies and discussions with local experienced agencies are required (Mayoux 2006, Denscombe 2007).

The need for a mixed approach

Where possible a mixed methods approach should be applied to investigate people’s views. The study should go beyond the distinction between qualitative and quantitative.

- Quantitative methods such as large-scale surveys are not popular in development research (Mayoux 2006) but they allow the researcher to demonstrate facts on a scientific basis, well understood by urban planners or engineers.
- Qualitative method are regularly used to assess household behaviour, including poor urban settings (Järvelä & Rinne-Koistinen 2005). Some of the tools used are derived from ethnology such as participant observation (Denscombe 2007) and often investigate behaviour and social relations.

Triangulation of methods does not ensure 100% accuracy of the data collected, but it leads to “reducing the probability of errors” (Denscombe 2007: 138). Focusing on the analysis of the data, it will integrate both the interests and the jargon of the different project’s stakeholders.

As sanitation improvement require the participation and the understanding of large range of partners; it is necessary to offer them a large picture including some familiar dimensions. Water management or sanitation projects can be “safely” understood only through a framework including methods and perceptions from different disciplines (Allan 2002).

The Research Design

This paper is drawn from the first year of a three-year research project. This research brings the lack of access to appropriate sanitation facilities together with the users’ needs and views. The main objective of the study will be to get a better understanding of the factors that influence the acceptability of shared sanitation facilities. This understanding shall lead to the production of guidance notes supporting urban planners during the assessment and the monitoring of user acceptability of shared sanitation facilities.

The research is structured around five main objectives focusing on the different relationships that exist between the implementers, the targeted population and the built facilities. It aims to:

- Understand the motives of agencies and individuals in implementing (providing) shared sanitation projects.
- Determine the usage patterns of sanitation facilities by different user groups.
- Assess the factors of acceptability expressed and defined by the population, recognizing the views of different user groups.
- Link the sanitation uses with the human and social factors acknowledging the local specificities of any low-income settlements.
- Consider how the sanitation implementers can anticipate user’s acceptability.

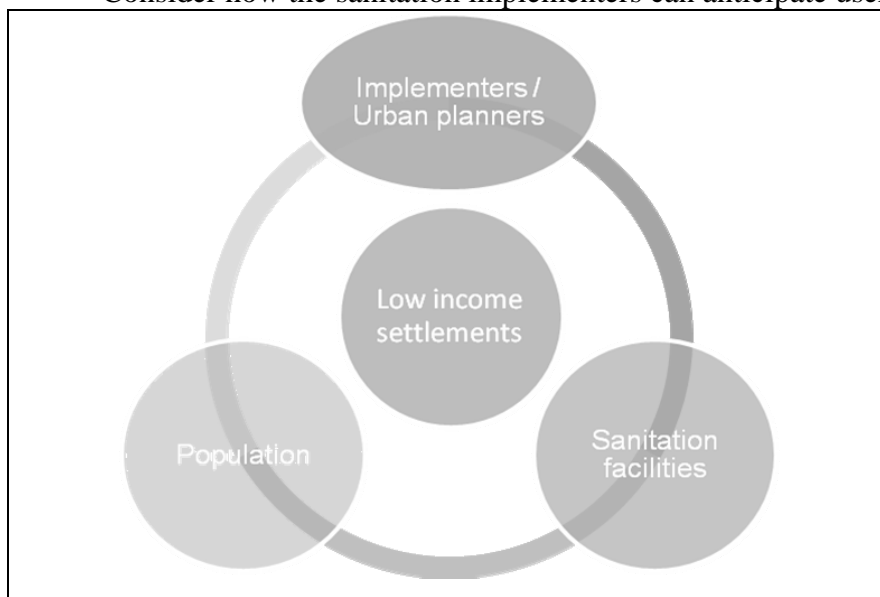


Figure 2: Focus of the research

The research aims to look at the motives of sanitation implementers, to study and assess the quality of the sanitations facilities and to understand the concern of the population with a focus on the most vulnerable groups. As shown in the figure 2, it is the dynamic relationships that exist between these components that captures the interest of the researcher. This dynamism is also dependent on the changes that may occur in the studied settlements such as for instance urban growth, institutional settings, and climate.

CONCLUSIONS

The study of sanitation programmes needs to include a large range of stakeholders from different sectors, using different methods and having different immediate objectives. Developing methodologies which include data collection and data analysis methods from social, technical and economic domains is a first step in getting a more complex but also a more realistic view of the sanitation's problems and solutions. All stakeholders shall then put the user of the sanitation facility at the centre of this multi-dimensional picture.

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