

GENDER, URBAN SANITATION INEQUALITIES AND EVERYDAY LIVES

A literature review and annotated bibliography

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INTRODUCTION¹

Even though sanitation was established as a separate human right by the United Nations General Assembly in January 2016, there has been an overall failure to reduce by half the proportion of the global population without access to basic sanitation (Millennium Development Goal 7, Target C). The Sustainable Development Goals have targets of gender equality, and the sustainable and universal provision of sanitation. Hopefully this will mean increased attention being given to the interests and well-being of poor women and girls living in slums and informal settlements who still lack access to adequate sanitation. The sanitation needs of women and girls are different from those of men and boys because of the former's requirements of personal safety, dignity and menstrual hygiene; there is also the issue of the disproportionate burden of unpaid labour in managing household sanitary needs. These inequalities in urban sanitation access have a great impact on the health, well-being and socio-economic status of women and girls. These inequalities continue to exist despite efforts to make the needs of poor urban women and girls an integral part of sanitation policies and project planning, implementation, monitoring and evaluation.

Despite the emphasis of low-income countries on gender inequalities and sanitation in their development goals, programmes and projects, there is still only a limited number of qualitative and quantitative evidence-based research articles available focusing on gender and sanitation continue to be available. This number further decreases when it comes to gender and urban sanitation in the Global South. The grey literature is more numerous, particularly that commissioned by international development agencies and non-government organisations. Missing from much of this evidence-based and grey literature are studies on the broader social, economic and environmental impacts on poor women and girls of daily life without access to adequate and safe sanitation. This means that there is very little evidence-based literature which examines how these inequalities in sanitation access affect the lives of poor women and girls who have to queue each morning to use public toilets, or decide which open defecation (OD) sites are the least dangerous to use. Also missing are studies on the socio-economic, health and well-being impacts on and coping strategies of women working in the informal sector, poor women and girls with a disability, elderly women, adolescent girls and homeless women or those living on the pavements, who all lack access to adequate and safe sanitation facilities.

These sanitation inequalities are exemplified by the time poor women and girls have to spend each morning queueing to use the toilet or getting up earlier to go with other women to OD sites. The necessity for such actions furthers gender inequalities because it puts at risk the time women have available for paid employment and other household responsibilities.²

¹ I would like to thank Marie-Helene Zerah and Kimberly Noronha for their comments and suggestions.

² A Water and Sanitation Program (2010) report has estimated that in 2006, an extra 78.6 billion hours were spent by both urban and rural populations in India in accessing shared community toilets and OD sites, based on a single visit per person per day using an extra 20

Truelove (2011, p. 148) has argued that this 'curtailment of opportunities (from income to education) due to water and sanitation activities reinforces a further level of physical insecurity and emotional violence, as some women become locked in a feedback cycle that brings them into distinct spaces and networks in order to access water and sanitation'. Women and girls living in slums often report instances of gender-based violence, shame and loss of dignity when walking along badly lit narrow paths to poorly designed and maintained community toilets or places of OD (Bapat & Agarwal 2003, Lennon 2011, McFarlane 2015, SHARE 2015 and Amnesty International 2010a). Phadke, Khan & Ranade (2011, p. 85), in a study of women and risk in Mumbai, have suggested that '[what] the lack of public toilets says is that women are less equal citizens than men and don't deserve the same consideration' in the design of urban spaces and the provision of urban infrastructures such as sanitation facilities.

These gender inequalities continue to exist despite the use of the concept of 'gender mainstreaming' in water and sanitation projects since the mid-1990s, which was designed to make the needs of women and girls an integral part of sanitation policies and project planning, implementation, monitoring and evaluation. Instead, gender has become a term that is widely used in project documents and organisational policy documents 'but is little theorised and ill-defined in most projects and supporting policy documents' (O'Reilly 2010, p. 49). Gender, according to the Water and Sanitation Program (2010, p. 9):

is a concept that refers to socially constructed roles, behaviour, activities and attributes that a particular society considers appropriate and ascribes to men and women. These distinct roles and the relations between them may give rise to gender inequalities where one group is systematically favoured and holds advantages over another. Inequality in the position of men and women can and has worked against societies.

EXISTING LITERATURE REVIEWS

There are several existing reviews of the literature on gender and sanitation but none specifically on gender and urban sanitation. This has largely occurred because of a lack of robust gender-segregated data on sanitation policies and technologies, along with reductionist framings of gender which are to blame for limited progress in verifying the need for, and impact of, gender-responsive sanitation.

Tilley et al. (2013, p. 298) have provided a comprehensive review of literature on gender and sanitation in low-income and developing countries in which they argue that 'strategies to make technologies gender-responsive need to be based upon a thorough analysis of the social arrangements of the intimate, and how these are negotiated and institutionalized in a specific context'. The recent discussion paper by Burt et al. (2016) for UN Women also reviews the existing literature to show how inadequate access to sanitation stops people realising their human rights to water and sanitation and gender equality. This review examines sanitation needs, facilities and

minutes. The economic cost of this lost time due to having to walk and wait at community toilets or OD sites was estimated at Rs 477.5 (or USD 10.5 billion).

access for defecation, urination and menstruation as well as design, planning and financing. The authors conclude that gender equality is about changing social norms and expectations, and designing woman-and-girl friendly and safe sanitation systems and facilities. An earlier review by Pearson & McPhedran (2008) examines both published and grey literature on the non-health impacts of sanitation, finding a great deal of repetition of data, particularly on girls' school attendance and toilet facilities, and a need for authors to consider their sources of evidence and who they are targeting.

METHODOLOGY

The main focus of this literature review is the everyday experiences of poor women and girls as they cope with lack of access to adequate sanitation in the rapidly growing cities of the Global South.³ The paper will discuss literature on gender and urban sanitation under the following heads:

1. Everyday experiences: how women and girls cope without access to adequate sanitation;
2. Gender-based violence and toilet insecurity; and
3. Gender and urban sanitation policies, programmes and projects.

Whilst there is now significant academic and grey literature on gender and sanitation, rural rather than urban sanitation is prioritised because that is still where the largest populations in the Global South without access to adequate sanitation reside. Therefore, some of the 68 articles and reports included in this review relate to both urban and rural sanitation in the Global South. Also, while gender and sanitation is often discussed in a significant number of evidence-based research articles and grey literature reports which examine the lives of slum dwellers and the urban poor, it is not the primary concern of such research. Overall, most of the evidence-based research and grey literature reviewed has focused on India, Bangladesh, Kenya, Uganda, Malawi and South Africa. The articles were largely found using Google Scholar searches and the website Sanitation Updates (<https://sanitationupdates.wordpress.com/>) which provides regular email alerts on recently published articles and reports.

EVERYDAY EXPERIENCES: HOW WOMEN AND GIRLS COPE WITHOUT ACCESS TO ADEQUATE SANITATION FACILITIES

Most women and girls who lack access to adequate sanitation facilities live in slums, informal settlements and informal housing clusters within legal and illegal colonies in low-income countries. In examining the impacts on their everyday lives of this lack of access to sanitation, a large percentage of the limited evidence-based research and grey literature has focused on slum dwellers and their social determinants of health. This is due in large part to the publication of the report *A Billion Voices* (World Health Organization 2005) which was prepared for the Commission on the Social Determinants of Health. One of the intermediate determinants of health this

³ This literature review is an output of a research project on women, urban sanitation inequalities and impacts on everyday lives that focused on two slums in Delhi; hence the emphasis is on poor women and girls.

report highlighted was living conditions, such as unsafe water, unsanitary conditions, overcrowding and poor housing in slums and informal settlements, and the linkages with urban poverty. The outcome has been an increase in the number of research articles on environmental conditions, diarrhoeal disease, maternal health and other diseases associated with poor sanitation and contaminated water supplies in slums (e.g. Bутtenheim 2008; Corburn & Hildebrand 2015; Corburn & Karanja 2014; Reddy & Snehalatha 2011).

The advent of the Millennium Development Goals brought more of a focus on everyday life in slums and this is reflected in some of the evidence-based research and grey literature which has interviewed women and girls about their daily coping strategies and experiences. One of the first studies to do this was that by Bapat & Agarwal (2003) which was based on interviews with women and men living on pavements, in slums beside railways tracks, and on steep slopes and swampy areas in Mumbai and Pune. These interviews provided insights into the lives of women who have to queue each morning to use filthy toilets or go to OD sites in all types of weather.

Coping without adequate sanitation also means that women and girls have to 'discipline their bodies around a lack of accessible and private sanitation, or face public shame, humiliation and embarrassment' (Truelove 2011, p. 148). The study by Sharma et al. (2015), based on fieldwork in four of Delhi's slums and unauthorised colonies, highlighted some of this disciplining behaviour by women. For example, the majority of women who participated in their research said they drank very little water each day so that they only urinated when defecating. Such behaviour has long-term consequences for their health, such as constipation, urinary tract infections and gynaecological problems. Besides the harassment and threats of violence the women reported facing every day when walking to and from the Community Toilet Complexes (CTCs), the actual design further threatened their safety as no consideration had been given to their needs for privacy, safety and dignity. Low walls and lack of distance between the cubicles for men and women encouraged peeping by men. Also, the location of CTCs behind the settlements and adjacent to barren ground increased the women's feelings of insecurity and raised fears that any cries for help would not be heard. The lack of female attendants also contributed to their safety fears, especially when bathing. As a result, many women used OD sites in nearby fields rather than take the risk of using the CTCs. Sharma et al. (2015) concluded that 'for some women going to the toilet is something that requires constant deliberation. Many a times, when their tactics falter, they learn the practice of control.'

The voices of women, adolescent girls, elderly women and men and those with disabilities, mostly living in slums, rural and peri-urban areas and without access to water, sanitation and hygiene (WASH) facilities, formed the basis of the *Leave No One Behind: India Country Report* (Water Supply and Sanitation Collaborative Council & Freshwater Action Network South Asia 2016, hereafter WSSCC & FANSA). This report, based on 18 consultations held across India between October and December 2015, found that the majority of participants used OD because the available community toilets were unsafe, dirty, lacked water and did not offer any privacy for women and girls. Elderly and disabled participants said that existing community toilets (and even those in households) were not designed to meet their needs. Because of the extreme

difficulties they experienced in using these toilets they usually went to OD sites.

In a study of the politics of OD in some of Mumbai's informal settlements, Desai et al. (2015) have argued that researchers must attend to the micro-politics of the provision of sanitation infrastructures within informal settlements (access, control and territoriality of community toilets and OD sites) and examine how they shape the everyday practices and experiences of many of the urban poor, in particular women. 'Practices of open defecation emerge through everyday routines and rhythms, both physiological routines of the body as well as routines and rhythms of daily life in informal settlements, as they intersect with sanitation infrastructures in these settlements' (Desai et al. 2015, p. 108). They found that many women had to control their bodies as they sought to balance domestic routines and the time spent going to, and queueing at, the toilet block. When they could not manage these time demands, they would turn to OD intermittently, even though they were able to pay to use a toilet. Other women used OD when the toilet block was closed, being cleaned or in need of maintenance.

Working women

The issue of working women's access to toilets at their workplaces has been largely ignored by researchers, non-government organisations and international development agencies. There is very little evidence-based research in India, or elsewhere, into the kind of toilet access (and facilities for menstrual hygiene management) available for women in office-based employment, small and large industrial units, government office buildings and other workplaces (Doctor 2014). With regard to the everyday experiences of poor women working in the informal sector and their access to toilets, there have been the occasional reports about those employed as domestic cleaners (Dey and Wilks 2015; Sharma et al. 2015) or waste/ragpickers (WSSCC & FANSA 2016), and the problems they have finding a toilet. Searches produced only two evidence-based studies focused on working women that included a discussion of their sanitation access. The first study is that by Rajaraman et al. (2013) of 48 working mothers employed in construction, domestic work, as fruit and vegetable sellers at markets and in a garment factory in Bangalore. They found that 23 out of the 48 women did not have access to toilets at their workplace. The most disadvantaged were the 12 construction workers. Whilst there were some incidences of residents in the neighbourhood permitting these women in construction to use their toilets, most had to resort to OD on the building site. Rajaraman et al. (2013, p. 439) concluded that:

Consequences of inadequate access to sanitation [for these working mothers] included fear and shame related to using open defecation areas, holding back the urge to urinate or defecate, walking significant distances during the work day to use a toilet at home, inability to maintain menstrual hygiene, and loss of pay due to missing work during menstruation.

An investigation into the health implications for women working in brick kilns, steel manufacturing and agricultural fields in Tamil Nadu by Venugopal et al. (2016) found that exposure to hot work environments and inadequate sanitation facilities at their workplaces directly contribute to risks such as heat-related stress and genitourinary problems. For example, those women

who lacked access to toilets had a six times higher prevalence of kidney damage due to a limited fluid intake so as to reduce the necessity of urination. In addition, 10 per cent of the women reported they suffered economic loss as they had to stay at home on days of their menstrual period.

Leave No One Behind: India Country Report (WSSCC & FANSA 2016) found in their consultations with sanitation and waste workers that these women did not have any access to water and sanitation facilities at their work sites even though they were working in very unhygienic conditions. Women at landfill sites in Delhi and Gandhinagar had to use poles and old saris or bed sheets to rig a covering so they could have a bath after their long and dirty workdays. A similar situation arises for women sweepers who often resort to OD as they cannot afford the cost of using a public toilet, if one is nearby.

Much of the media attention on working women and access to toilets has been focused on the 'Right to Pee' movement in Mumbai which has used a public awareness campaign and Public Interest Litigation (PIL) to compel the Brihanmumbai Municipal Corporation (BMC) to build more toilets (or repair existing ones) in public spaces for women in 27 wards of the city. This has brought together 40 community-based organisations to put pressure on the BMC by using a Right to Information petition to find out the existing number of public toilets for men and women in the city. They have also surveyed the state of 129 existing toilets blocks; this research formed the basis of a report, supported by 50,000 signatures, that was presented to the BMC seeking action on the lack of municipal public toilets for women (Patel 2013). A PIL was subsequently filed, and the Bombay High Court responded by asking municipal corporations to be more gender sensitive and inclusive when designing urban infrastructure. The Bombay High Court also said that it was a matter of equality that women had access to clean and safe toilets in convenient public places (Bhasin 2015). As of February 2016, the five-year-old campaign has succeeded in getting the BMC to construct 96 women's toilets. Besides better maintenance of existing facilities, the campaign has been pushing for a female-centric design approach that takes privacy and security into consideration (Venkatraman 2014).

Sharma et al. (2015) also reported, in the study based on four slums in Delhi, that some of the women employed as domestic workers were denied access to toilets at workplaces, forcing them to rely on opportunism, tact and discretion to relieve themselves. Thus when some were told to go back to their *jhuggi* to relieve themselves, they often opted to squat behind cars parked nearby, negotiated access with security guards to use toilets in apartment blocks or used their employer's toilet when nobody was around.

On the issue of menstrual hygiene management in the workplace, Sommer, Chandraratna et al. (2016) provide a commentary on the need for research on the topic that which they frame as a rights issue. They argue that as there are now so many women working in the informal sector there 'is an urgent need to document the specific social and environmental barriers they may be facing in relation to menstrual management, to conduct a costing of the implications of inadequate supportive workplace environments for menstrual hygiene management, and to understand the implications for girls' and women's health and wellbeing' (Sommer, Chandraratna et al. 2016, p. 1).

Differently abled women and girls, and elderly women

The access of differently abled women and girls and elderly women and access to sanitation facilities is also a very neglected area of study within the gender and sanitation literature even though about 15 per cent of the world's population has a disability (WaterAid 2011). For example, the India Sanitation Portal (www.indiasanitationportal.org) lists only two articles relating to access for the differently abled even though Census 2011 found that 2.1 per cent of India's population has a disability and this equates to 21 million people (9.3 million females and 12.6 million males). Whilst there are many fact sheets, handbooks,⁴ policy and projects documents available (see Sustainable Sanitation Alliance: www.susana.org/en/search?searchword=sanitation+and+disability), there is very little evidence-based research, particularly in India, or South Asia more generally, on how women and girls with disabilities cope when forced to use toilets that are often dirty or OD sites.

The Global Report on Disability,⁵ for example, found that '[d]isabled people represent the largest socially excluded group globally and most live without access to basic sanitary services, which can exacerbate impairments and poverty. However, so far disabled people have typically been excluded from development intervention and research' (WaterAid 2011, p. 2). Groce et al. (2011) have provided an overview of the little that is known about the access to adequate sanitation, if any, of persons with disabilities in low-income countries. Whilst their paper identifies the existing gaps in research, it does not focus on gender or the everyday experiences of people with disabilities in coping with inadequate access to toilets.

One of the few reports to give voice to disabled women, men, girls and boys, and elderly men and women is the *Leaving No One Behind* report (WSSCC & FANSA 2016) which found that water, sanitation and hygiene facilities across India were inaccessible, inappropriate and totally inadequate for their needs because they have to use the same toilets as the able-bodied in both urban and rural areas. This report also highlighted that '[women] with disabilities feel more vulnerable during pregnancy and menstruation. They depend on other people to help them with cleaning and changing pads/cloth, which leads to irregular and poor hygiene management. They are also more vulnerable to

⁴ For example, the Swachh Bharat Mission (Gramin), Ministry of Drinking Water and Sanitation, Government of India, launched the 'Handbook on Accessible Household Sanitation Facilities for Persons with Disabilities' in association with WaterAid India in December 2015, viewed 14 February 2017 <<http://www.mdws.gov.in/sites/default/files/Water%20Aid%20Handbook%20final.pdf>> which has been designed as a practical guide for NGOs, health workers and officials involved in rural sanitation projects and programmes. It is intended to help these workers understand the problems facing disabled people, the elderly and other vulnerable groups in accessing WASH facilities. At this time no guidelines relating to urban sanitation projects have been found.

⁵ The report refers to disability as 'the challenges faced due to a person's impairment, activities (i.e. walking or eating) and through discrimination faced in life (i.e. stigma and facing discrimination in access to information, employment or infrastructure). These are disabling barriers. The disability experience results from the interaction of health conditions, environment and personal factors. These vary greatly; not all disabled people are equally disadvantaged. Differing factors include gender, wealth, ethnicity, religion, age, culture and available resources' (WaterAid 2011, p. 9).

sexual and verbal abuse' (WSSC & FANSA 2016, p. 22). The participants also reported that there were no toilets for the disabled in public spaces such as bus and railways stations, hospitals and market places.

The study by Tiwari (2015) of women and girls living in some of Mumbai's slums is another that has given voice to older women about the problems they face every day. A 70-year old woman, who was interviewed just after she had returned from hospital because she had an accident when going for OD in the jungle area around Ambujwadi, Shiv Shankar Nagar (near Malvani, one of the larger slums in Mumbai), said:

During the monsoon it is extremely difficult to cross the squishy entrance of the jungle and walk inside. I slipped ... and hurt my head because of which I was hospitalised. A lot of women face similar accidents every monsoon but it is the older women of the community for whom this problem hits the hardest ... I am worried about what I might have to go through when I am older and unable to walk. The handicapped and the older members of the families have to be carried into the jungle each time (Tiwari 2015, p. 40).

One of the few evidence-based reports on disability and sanitation is the qualitative study by White et al. (2016, p. 1) which explored the WASH priorities and barriers faced by 35 disabled people and 15 carers living in urban and rural areas in Malawi. They found that 'being female, being from an urban area and having limited wealth and education were likely to increase the number and intensity of the barriers faced by an individual' who had a disability in accessing sanitation facilities.

Adolescent girls

The everyday experiences of adolescent girls and the strategies they use for coping with lack of access to adequate sanitation facilities at the household level or in public spaces or when attending school is another neglected area of research. Only five relevant studies were found.⁶ The first, a qualitative study by Nallari (2015), focused on adolescent girls living in informal settlements in Bangalore. When asked what they wanted most to improve their lives, the majority of the girls spoke of access to a safe toilet. This study also examined the deprivations these girls face, due to a lack of access to sanitation facilities, in education, privacy, mobility in public spaces as well as the risks they face, such as harassment, assault, and chronic and communicable diseases. All these deprivations can directly contribute to a 'structural pathway for cyclical gender-based disempowerment and injustice' (Nallari 2015, p. 73) that these adolescent girls encounter daily. This means there is a pressing need for gender-sensitive design in toilets, policies and programmes that can enable adolescent girls to have the same opportunities in life as their male peers.

A report by Dasra (2015), a Mumbai-based NGO, advocated that adolescent girls must be viewed as critical end users of sanitation facilities and services rather than only as beneficiaries of such projects. This is because a lack of access to sanitation facilities can have a lifetime impact on their health, identity and socio-economic activities. For example, there is a dropout rate of approximately 23 per cent amongst girls who have reached

⁶ The evidence relating to menstrual hygiene management, adolescent girls and sanitation is discussed below.

puberty in India because they often lose up to six days a month due to the lack of menstruation hygiene facilities in schools. Dasra advocates a targeted approach that addresses their needs rather than top-down programmes based on the one-size-fits-all approach. 'While macro-level data are available on sanitation access and gendered school attendance, the everyday "lived experiences" of schoolgirls with poor sanitation access are poorly understood' (Dasra 2015, p. 137).⁷

Abrahams & Mathews (2006) explored the issue of adolescent girls, sanitation and school attendance by examining the intersections of a lack of access to sanitation, sexual coercion and safety in three schools in South Africa, using qualitative data collected through focus groups, interviews, participant observation, mapping and photography. They asked girls (16 years and older) how they perceived the risks of using toilets at school and how they negotiated these dangers. They found that the three schools either had no toilets, or very inadequate ones that were 'filthy, dark, smelly and blocked as well as broken, so that they had to stand in awkward positions' (Abrahams & Mathews 2006, p. 752) to use them. The ground around these toilets was littered with excrement, soiled sanitary pads and used toilet paper. As they posed a risk to any girls using them this discouraged safe and hygienic sanitation practices. In addition, male teachers sexually abused some girls using a variety of strategies, including victimisation, to stop them reporting these incidents.

The systematic review by Birdthistle et al. (2011) has been included because a lack of school sanitation facilities has been cited as a contributing factor to the lack of gender parity in education in low- and middle-income countries. They synthesised the evidence on the impact of separate toilets for girls on their enrolment, attendance and completion in schools but did not find any studies addressing the issue of separate-sex toilets at schools. They did note, though, that some studies showed that girls often choose not to use, or could not use, the toilets because they were unsafe, poorly maintained and lacked water and soap for handwashing.

The study by Jewitt & Ryley (2014) is the most relevant to this section because it focused on the interlinkages between gender, sanitation and school attendance amongst adolescent girls in Kismu, Kenya. They examined how the 'everyday geographies of menstruation and puberty reflect and re-produce inequalities in gendered school attendance and broader life chances'. Based on qualitative interviews and focus groups they found that while poverty is always a factor in parents withdrawing adolescent girls from schools, a lack of sanitary napkins and poor menstrual hygiene management education were linked to poor school attendance.

Women living on pavements or homeless

The sanitation needs of women and girls who are homeless and/or living on pavements is another aspect of gender and sanitation that has received

⁷ It should be noted that in September 2014 [the Government of India launched](#) Swachh Bharat Swachh Vidyalaya, a national campaign to ensure that every school has a set of well-maintained water, sanitation and hygiene facilities which are gender-segregated. This is intended to address the problems of girls dropping out of school (Ministry of Human Resource Development 2014)

limited attention. A common factor among all the studies reviewed below is that the charges levied for using public toilets force many pavement dwellers and homeless persons to resort to OD. A study of the changing patterns of life and livelihood of 371 women pavement dwellers in Dhaka city by Democracywatch (2014) found that the majority of respondents used toilet facilities at a bus terminal, railway station, petrol pump, marketplace, mosque and other public venues, including pay and use ones. But a significant number of the women reported that their only option in times of need was OD, as there were no toilets near pavement areas. However, a socio-economic survey of 196 households of pavement-dwelling families living in various parts of central Kolkata by Rawat (2013) found a different story, with 91.6 per cent of the pavement dwellers being able to use pay and use toilets. This is because the Kolkata Development Authority has built 170 public toilets all over the central city which they manage effectively. Rawat (2013) also found no differences in use between Hindus and Muslims or within different income groups. But the rising charges for these pay and use toilets were found to be discouraging multi-use by some households, often leading to OD.

A study by Walters (2014), on homelessness and the right to water and sanitation in Indian cities, asked women and men in different settings such as homeless shelters, temporary and makeshift shelters and open places/pavements in Delhi (72 people) and Bangalore (42 people) about their everyday experiences in accessing these services. She found that 'high user-pays charges for toilets, limited opening hours; and a lack of privacy and safety, especially for women and children, leave homeless people highly susceptible to a range of sanitation insecurities and vulnerabilities' (Walters 2014, p. 769). The only exception were those who stay in well-managed and equipped shelters. A similar rights-based approach to water and sanitation services for the homeless was conducted in Dhaka, Bangladesh, by Uddin, et al. (2016) which found that homeless people do not use public toilets because of the high user-pay charges levied by the contractors who operate public sanitation facilities as private businesses. Everyone has to pay these charges regardless of their capacity to pay.

Only one study was found that specifically focused on pavement dwellers and their access to toilets and OD sites. Joshi & Morgan (2007) interviewed a socially diverse group of pavement dwellers living in South India and Dhaka, Bangladesh, and found that their needs varied according to age and gender. As privacy for defecation for men and boys was not really an issue, because of general cultural acceptance of masculine exposure, they could use open spaces. But the choice for some adolescent girls in Hyderabad was between using a toilet complex if they could afford the Rs 2 charge or going to the railway tracks early in the morning in an attempt to ensure some privacy. With a bath costing Rs 5 to Rs 6, most girls restricted themselves to washing and cleaning at the time of the monthly menstrual cycle. Other respondents were able to negotiate access to toilets at different locations, such as an older woman in Dhaka at a local sports club, while parents said that smaller children used the drains or defecated on paper which they threw away. Generally, women reported coping strategies similar to those of women who live in slums, of going to OD sites in groups in the early morning or evening.

GENDER-BASED VIOLENCE AND TOILET VULNERABILITIES

The vulnerabilities that women and girls living in slums and informal settlements may face every day when making their sanitation choices is probably the most profound of the gender inequalities that occur in urban settings. The linkages between gender-based violence and the lack of urban sanitation are poorly researched, documented or addressed in practice. O'Reilly (2016) has called this 'toilet insecurity' because it not only includes the uncertainty that women and girls face going to community toilets or OD sites but also includes the 'inability to tell anyone if an incident occurs' (O'Reilly 2016, p. 21). To do so may bring shame upon a family or household. These sensitivities around gender-based violence and sanitation have thus contributed to under-reporting of incidences by women and girls which makes the gathering of data difficult. Given the methodological and ethical challenges in researching gender-based violence and sanitation, researchers prefer qualitative methods (House Sommer, Ferron, Cavill and House 2014).

A first step towards addressing this paucity of research, evidence and practical actions was the development of a violence, gender and WASH practitioner's toolkit by House et al. (2014, p. 107) which is based on a review of the existing evidence, grey literature and discussions with professionals working in this sector. The authors grouped gender-based violence into four categories:

1. Sexual violence (rape, assault, molestation and inappropriate touching);
2. Psychological violence (harassment, 'eve-baiting', bullying and other actions that may cause fear, stress and shame);
3. Physical violence (beating or fighting leading to injury or death; and
4. Socio-cultural violence (social ostracism, discrimination, political marginalisation or social norms that have negative impacts).

In reviewing the literature, they found that the vulnerability of women and girls to gender-based violence increased in situations where they were accessing sanitation and water. Locations included humanitarian and refugee camps, and rural and urban settings. To date, most of the available qualitative research and grey literature on gender-based violence and urban sanitation is largely focused on women and girls living in slums in India, Kenya, Uganda and South Africa.

Urban India

The article by Bapat & Agarwal (2003) was probably one of the first to highlight the issue of gender-based violence and urban sanitation inequalities in Indian slums:

The day before yesterday, an old woman went out to defecate at seven in the evening and a man came from behind and grabbed her. A few of us generally go together for the toilet. Men hide behind the bushes and watch women when they are squatting. If they see a woman alone, they creep in and molest her. In the past, we met the councillor many times and told him about the circumstances in Sathenagar [Mumbai]. But for years nothing happened (Bapat & Agarwal 2003, p. 74).

Three qualitative studies and one quantitative study have been published recently examining the linkages between the lack of access to sanitation in slums and gender-based violence in India. There is also an unpublished paper that examines unequal gender relations, sanitation access and toilet insecurity based on interviews with women in two Indian cities. The first is by Lennon (2011) who focused on women living in three slums in northeast Delhi - Bhalswa, New Seemapuri and Sunder Nagri - where she found that the dominant themes in their lives were fear, anger and disgust. These women have to live with a daily fear of sexual violence when going for OD or using public toilets. They were angry because local politicians are unsupportive and do not respond to their requests for better water and sanitation facilities. It is the same with the police because they do not respond to emergencies, or follow up their complaints with actions. Their disgust stemmed from overflowing sewage, filthy gutters and the prevalence of 'wild' animals.

The second study by Tiwari (2015) used focus groups, in-depth interviews and classroom discussions to understand the everyday lives of women and girls in some of Mumbai's slums who use community toilets. This enabled her to examine the linkages between a lack of sanitation, gender-based violence, impacts on their safety and mobility, and how these prevent women from living dignified lives. Tiwari (2015, p. 59) observed: 'Women's dignity is compromised each time they are harassed while going to the toilet and yet they have no other option but to use that very toilet' every day. In interviewing girls, Tiwari (2015) found that they do not talk about the sexual harassment they face (i.e. comments, gestures and staring) when using community toilets with anyone because they are afraid their parents may prevent them from going to school. Similarly, they do not complain to the police because the arrival of the latter at their home may give neighbours doubts about their character and dignity.

The third recent study is by Belur et al. (2017) who explored whether a lack of access to adequate sanitation, poor lighting, gender-insensitive design and location of toilets, unsafe approach roads and a lack of police presence are facilitators of gender-based violence in two slums (Dharavi and Nehru Nagar) in Mumbai. From a survey of 142 households (in which 92 per cent of respondents used public toilets), they found that the women's fear of crime was greater than actual experience and that perceptions of insecurity varied according to toilet types and locations. Most participants felt that the provision of better lighting and a regular police presence could reduce the fear of gender-based violence around toilets.

The fourth is the quantitative study by Jadhav et al. (2016), in which they used non-partner sexual violence (NPSV) data from India's 2005-06 National Family Health Survey-III to estimate logistic regression models of the effects of household sanitation facilities (toilet, pit or none) on NPSV in the last year among women who have resided in their current home for one year or more. They found that women who use OD sites like open fields or the side of a railway track are twice as likely to get raped compared to women using a home toilet. This indicates that 'infrastructure improvements can provide women with some level of protection against NPSV' (Jadhav et al. 2016, p. 9) along with behaviour changes to ensure that these toilet facilities are utilised.

An unpublished paper by Kulkarni et al. (2014) is one of the few articles reviewed here that actually examines unequal gender relations and sanitation access. The authors interviewed 112 women, mainly from scheduled castes, living in eight slum pockets in Pune, and one slum pocket and three slums in Jaipur. Their primary research question was: 'If gendered violence is symptomatic of power inequalities in society, then how do those inequalities manifest themselves in women's psycho-social stress and translate into women's decisions about where to relieve themselves?' (Kulkarni et al. 2014, pp. 2-3).

Three themes emerged from their analysis of the interviews and focus groups: harassment and assault, fears and stresses, and coping mechanisms. These psychosocial stresses were experienced differently by women according to age, caste, locality and type of sanitation facility or use of OD. Whilst many women experienced a sense of powerlessness in trying to change their situation, the researchers did find that women exercised power at the personal level. This was done through disciplining of their bodies to reduce the need to urinate or defecate at night (when public toilets are closed or seen as very unsafe), and going in groups to defecate which offers some protection and the ability to fight back against male harassers. Being a member of a dominant caste in a slum also helped women to mitigate harassment and their fears. The inverse was the case for women from a minority group or caste. This suggests, said Kulkarni et al. (2014), that sanitation in the form of OD and public toilets maintains the status quo of unequal gender relations. They also observed that 'individual women experience the risks of inadequate sanitation differently, but at broader scales, our ethnographic evidence suggests that provision of adequate sanitation could: 1) do little to improve gendered social relations; 2) make these relationships worse; or 3) improve them' (Kulkarni et al. 2014, p. 18). This is because gender-related violence is about the unequal relations of power between women and men, caste communities, and the richer and poorer citizens of cities, and these are not being addressed in current public toilet technologies and designs.

Eastern and southern Africa

Two interlinked reports from Amnesty International (2010a and 2010b) focus on endemic gender-based violence in slums and informal settlements in Nairobi, Kenya. Based on interviews with 130 women, they indicate findings similar to the experiences of women living in slums in India: risk of sexual violence when walking through unsafe areas to and from shared pit latrines, low police presence, vulnerabilities faced when using toilets that do not meet the needs of women and girls, and a lack of faith in the justice system. Poverty is both a cause and consequence of violence because when women suffer physical, sexual or psychological violence, this impacts their productive capacity. Thus gender-based violence associated with a lack of access to safe sanitation facilities can cause the impoverishment of households and communities through lost income and healthcare costs from communicable diseases (particularly for children) and ailments caused by the coping strategies women use to control their urination and defecation needs.

Quantitative evidence of an association between access to sanitation and violence against women in Kenya comes from two studies. Winter & Barchi (2016) analysed data from Kenya's 2008 Demographic Health Survey and found

that women who primarily use OD, particularly in socially disorganised communities, face higher odds of experiencing non-partner violence. This echoes the findings of Jadhav et al. (2016) for India. Winter & Barchi (2016) also emphasised the critical need for better data collection on gender-based violence and poor sanitation access which would allow researchers to explore this relationship in more detail and begin to develop appropriate and effective strategies to reduce its incidence.

Gonsalves et al. (2015) developed a mathematical model linking the number of sexual assaults, the number of sanitation facilities and the time taken by women walking to a toilet, to see if increasing the number of toilets in the South African urban township of Khayelitsha would reduce both the incidence and social burden of sexual assault and the economic costs. They found that improving access to sanitation facilities would reduce the incidence of non-partner sexual violence, and that the higher toilet installation and maintenance costs would be more than offset by the lower socio-economic, health and other costs to women and girls and the broader society.

Health and well-being impacts of gender-based violence

The global burden of disease from a lack of sanitation, hygiene and water has been well studied (e.g. Bartram & Cairncross 2010) whereas the socio-economic linkages between poor sanitation, gender-based violence, and the health and well-being of women and girls living in slums and informal settlements have received far less research attention. In addition, no articles or reports were found that examined the issue of intra-household gender relations and any decision-making about how to mitigate or prevent the harassment and physical harm that women and girls in a household may face every day. One way to do this is to construct a private toilet that will protect the dignity and safety of women and girls in a household. But who makes the decision to construct (or not to construct) a household toilet? Is the decision-making situation different for female-headed households?

The three articles reviewed here examine the linkages between a lack of access to sanitation, the stressors experienced by women and girls, such as non-partner violence, and the impacts on their health and socio-economic well-being. Corburn & Hildebrand (2015) addressed the pathways between a lack of adequate sanitation and women's health in their study of 650 residents living in Mathare, an informal settlement in Nairobi, Kenya. Sixty-seven percent of respondents were women and their most frequently reported physical complaints were gender-based violence associated with sanitation activities (68 per cent of the 296 women), respiratory illness (48 per cent), diabetes (33 per cent) and diarrhea (30 per cent). The insecurity and indignity relating to their sanitation activities that the women spoke of in focus groups 'also leads to increased anxiety, sense of powerlessness and hopelessness, marginalization and stigmatization ... and the ensuing reductions in women's mobility' (Corburn & Hildebrand 2015, p. 5).

This issue of sanitation-related psychosocial stress is the focus of two articles based on research conducted in Odisha (Hulland et al. 2015; [Sahoo et al. 2015](#)) across urban and rural areas with high rates of OD. Sahoo et al. (2015) used three categories of sanitation-related psychological stressors - environmental, social and sexual/gender-based violence - which are modified by a woman's life stage, living environment or access to

sanitation. They found that 14 of the 20 women interviewed, who lived in urban slums, reported stressors relating to gender-based violence. These 'women rarely expressed a sense of agency to change their sanitation situation and commonly said things like, "What else can we do?" Rather, their responses to sanitation-related psychological stressors suggested attempts to cope with the undesirable realities causing sanitation-related stressors to arise' (Sahoo et al. 2015, p. 87) by changing their behaviours, such as going in groups to defecation sites.

The study by Hullah et al. (2015) builds on the research by Sahoo et al. (2015) and examines how sanitation-related stressors (20 were identified) have a differential impact on women living in different geographical locations and their differing social roles within a household or community and across the life-course. This was done using index cards that were labelled with specific stressors identified in the study by Sahoo et al. (2015). Newly married women identified menstrual hygiene management as particularly stressful due to restrictive sanitation behaviours based on cultural traditions, whereas for adolescent girls the most stressful activity was defecation and the possibility of encountering physical violence. Among the urban women interviewed, 86 percent were always concerned about rape/assault, 57 percent were concerned about being seen and 30 percent reported physical barriers, such as fences or gates near OD sites, as a stressor. Hullah et al. (2015, p. 15) concluded by suggesting that '[u]nderstanding the dynamics of how social geographies and life course stages shape women's sanitation experiences may help to tailor sanitation needs given cultural and geographic diversity'.

GENDER AND URBAN SANITATION POLICIES, PROGRAMMES AND PROJECTS

This section examines the lack of gender analysis in the development of urban sanitation policies, the design of sanitation systems, facilities and services, and the resettlement of people displaced by development projects. Also included is a report that evaluates why a Community Led Total Sanitation (CLTS) project in two slums in Kalyani, West Bengal, seems to have been successful but faces many challenges in being replicated in other urban settings. A review of two gender analysis approaches to sanitation policies and programmes concludes this section. Whilst there are evidence (from published literature, project reports and evaluations) and examples of the improved service provision, knowledge about hygiene, health and income benefits that have accrued to households and communities when women have played an active role in the planning, implementation and operation of water and sanitation programmes and projects, many of these are in rural areas (Fisher 2006). The work of the Alliance⁸ in building community toilet complexes in Mumbai, Pune and other Indian cities has seen women from slums take a leading role in decision-making, planning, building and maintaining these sanitation facilities (Burra et al. 2003) but articles about their work do not include a gender analysis approach and so are not discussed below.

⁸ Society for the Promotion of Area Resource Centers (SPARC), the National Slumdweller Federation (NSDF) and Mahila Milan.

Sanitation policies

While many sanitation policies do recognise that women and girls have specific needs, and many professionals working in this area are certainly aware of the linkages between inadequate sanitation and the societally generated inequalities of gender and poverty, policies fail to acknowledge how gender inequalities create sanitation vulnerabilities (or toilet insecurity) for millions of women and girls. O'Reilly (2016) argues that for women and girls in low-income areas, the consequences of inadequate, or insecure, sanitation include fear of harassment, experiences of violence and psychosocial stress. When safe, usable toilets are not available, women and girls face three types of toilet insecurity: (1) the material reality for many women and girls that they do not have access to a toilet; (2) the risk of venturing out for OD if there is no toilet; and (3) having access to a public toilet, but one that is unusable (e.g. filthy) or unsafe (e.g. insufficient lighting), so that women and girls accept the risk of going for OD. This experience of toilet insecurity for poor women and girls varies significantly over their life-course and also depends on their socio-economic status, religion, ethnicity, marital status and physical abilities. Gender norms also vary from rural to urban settings and within and across countries.

Creating gendered toilet security depends on policymakers – as people, as empathetic human beings – recognizing inequality between men and women as socially produced. It depends on them grasping that within this relationship, women are vulnerable to violence, with some women being more vulnerable than others due to cross-cutting characteristics such as religion, caste, age, and so on' (O'Reilly 2016, pp. 21-22).

While many sanitation approaches have been able to reduce toilet insecurity by designing and building toilets that meet the specific needs of women in different geographical locations, they do not change the unequal power relations between men and women which cause toilet insecurity. Therefore, O'Reilly (2016) argues that the focus of sanitation policies must move away from just building toilets to addressing the existing gender inequalities that produce toilet insecurity for women and girls. She suggests that a strengths-based approach,⁹ which argues that all individuals and communities have strengths and capacities that can be drawn upon to bring about positive changes in areas such as gendered inequalities, could be used in sanitation policies. In particular, strength-based approaches can focus on men's positive behaviours, rather than the negative ones, when it comes to developing initiatives to counter non-partner-related violence and other aspects of toilet insecurity.

The ethnographic study conducted by Joshi et al. (2011) in Chittagong, Dhaka, Nairobi and Hyderabad, whilst not directly addressing gender and urban sanitation, has been included in this review because they argue that the programmes and projects packaged as low-cost 'safe sanitation', or adequate sanitation, for the urban poor 'do not match the sanitation needs of a very diverse group of urban men, women and children'. This has occurred because two of the most important aspects, among many which differentiate the urban

⁹ See, for example, Willetts et al. 2013.

poor, have been generally ignored by those who design and implement sanitation programmes and projects. They are 'first spatial, where one lives, and second gender, or the complexities of gendered identities and related sanitation needs and responsibilities in these diverse settings' (Joshi et al. 2011, p. 91). The consequence of these omissions is that sanitation interventions have been promoted based on the assumption that the urban poor are homogeneous groups of adults and children, living in houses with secure tenure and willing to pay for, and manage, sanitation infrastructure that will eventually benefit them in terms of networked services and improvements in their health and well-being. Such interventions have often made existing inequalities worse, particularly in 'the cash-dependent economies of urban slums, [where] gendered identities closely determine sanitation privileges' (Joshi et al. 2011, p. 103).

The report by Jagori & Women in Cities International (2011) on gender and access to essential services in low-income settlements found that a gender analysis of the existing infrastructure, facilities and services is critical to understanding the everyday lives of women and men in slums, resettlement colonies and other informal settlements, whether legal or illegal. The provision of gender-neutral infrastructure and services, they argue, would 'have a greater impact on the lives of poor women and girls than poor men and boys due to their responsibilities in household management and the provision of domestic services' (Jagori & Women in Cities International 2011, p. 117).

The violence, gender and WASH practitioner's toolkit developed by House et al. (2014) has the stated aims of encouraging practitioners to recognise the risks of gender-based violence associated with WASH projects and that they do have the capacity to make such projects safe for women and girls. Thus they argue that if gender is effectively considered when sustainable WASH services are being established, this can make a significant contribution towards bringing about longer-term changes in the attitudes and relationships between men and women, which, over time, should help to reduce vulnerability to violence for women and girls.

The launch of the Swachh Bharat Mission in 2014 has given a new focus and impetus to sanitation policy and development in India. While the political will exists to eliminate OD, and priority has been accorded to women in the construction of community and public toilets (Ministry of Urban Development 2015), the progress so far has been uneven and inequitable (Salve 2016). To date there are no evidence-based analysis or evaluations of the Swachh Bharat Mission but the *Leave No One Behind* report has noted:

'women, adolescent girls, elderly persons with disabilities, sanitation workers and waste segregators are [still being] systematically excluded from safe and adequate hygiene and sanitation services. They are further excluded from decision-making processes, even though there are specific challenges regarding access to water and sanitation. This lack of voice needs to be addressed' (WSSCC & FANSA 2016, p. 14).

A similar view has been expressed by Burt et al. (2016, p. 7) in their discussion paper for UN Women. 'Women's voices must be heard at all scales of sanitation policy ... More research is needed on women's voices in



sanitation interventions, from design to disposal, including in Community Led Total Sanitation', which is discussed below.

Design of sanitation systems and toilets

The lack of gender-sensitive design in community toilet complexes and public toilets is an ever-present problem but has only received limited attention from researchers. The *Leave No One Behind* report found that the 'design of the existing facilities reflect[s] a complete lack of understanding of their needs, not only by service providers, but at times even by their own family members' (WSSCC & FANSA 2016, p. 12). A paper by Khosla (2000) discusses problems of large toilet complexes which are often located at some distance from most households within a community versus smaller alternative approaches to design and construction. She builds a case for household toilets and networking poor households/communities to city systems by using examples from some best practices in India at the time of writing. Khosla argues that sanitation policies and programmes require a whole city perspective if they are to reach the urban poor. They must include people's involvement, which is an issue that is still to be addressed effectively by governments and implementation agencies even though often prescribed in sanitation policies, programmes and projects.

While there are various studies on the use of shared toilets or latrines in slums, only two articles with a gender perspective were found, both focused on Kampala, Uganda. In a qualitative study based in six slums using focus groups and interviews, Kwiringira et al. (2014) examined the gender differences in access, decisions to use and cleaning of shared community toilets. They found that choices and use tended to be gendered because there were fewer options available for women than men. Generally, the women who participated in this study greatly valued privacy, ease of use, proximity to their household, respect and dignity, when choosing whether to use shared community toilets. Men, on the other hand, only used a community toilet for defecation, and privacy was much less of a concern for them. The authors also emphasised that the collection of statistics on community toilets generally fail to assess the condition of those facilities and who can access them.

In a report for WaterAid, Massey (2011) investigated the question of whether or not the provision of public toilets is a good solution for women living in slum communities where they face the risk of humiliation, violence and harassment every day. When women only have access to a very limited number of poorly designed and maintained toilets this situation 'contributes to an overall sense of insecurity and of shame experienced on a daily basis, with implications for the use of existing facilities. The gravity of this issue demands increased attention and action as a vital element of the global effort to provide sanitation for all' (Massey 2011, p. 8).

A research brief by Hartmann et al. (2015) argues that if sanitation outcomes are to be improved, what is essential is a gender-responsive approach to the design of sanitation systems, which addresses women's socio-cultural concerns (privacy and safety) and their biological needs (menstrual hygiene management). They then argue that new research is needed to improve the understandings of the connections between gender and sanitation and how gender-responsive designs can be developed. There is a need to evaluate the long-term impacts of sanitation systems on access, gender equity, safety, health and socio-economic well-being.

An older study by Sheikh (2008), based on nine resettlement colonies and slums in Delhi, examined the existing policies and agencies involved in the building and maintenance of community and public toilets to understand how these policies affect the daily lives of women. Sheikh found confusion about the norms for toilet construction, operation and maintenance between national-level policies and those at the state and local government levels, which has left poor women and girls without access to safe and clean toilets.

However, there have been several gender-sensitive toilet programmes and projects implemented in India. In 2001 the government of Tamil Nadu began constructing Integrated Sanitary Complexes to promote sanitation and hygienic practices for rural women and children (Government of Tamil Nadu n.d.). After falling into disrepair, these complexes were renovated in 2011-12. This has improved patronage by rural women and children (Josephine 2012) and will help reduce rates of OD. In Thane, a suburb of Mumbai, the NGO Agasti has been testing out four women-only restrooms arranged around the base of a tree, which is located on a central thoroughfare close to the local bus terminal. These restrooms not only seek to address the acute shortage of toilets for women in the city, but also provide a safe space for women to wait for a bus, meet friends on the benches under the tree or recharge a mobile phone (Anzilotti 2016). In Kerala women-friendly 'she-toilets' have been installed at railways stations by the Kerala State Women's Development Corporation (Anon 2016).

Resettlement planning, gender and sanitation

While there are many research articles and reports on gender and resettlement, such as the work by Jagori in Delhi's resettlement colonies for people evicted from alongside the Yamuna River, only one was found that examined gender and sanitation in the context of development project displacement and resettlement. The case study by Sikka (2016) examines the resettlement sites for people displaced by the Sardar Sarovar Project in Dabhoi Taluka, Vadodara, Gujarat. Even though the displaced population included a large number of female-headed households, Sika (2016) found that the building of toilets was not even mentioned amongst the list of civic amenities to be provided. This highlights again the lack of gender analysis in the policy and planning processes, documentation and implementation. The outcome is that only 26 per cent of the households surveyed had toilets. Others were being used for storage of fodder and other household items. This is most probably a reflection of male dominance in inter-household gender relations and decision-making about how these toilets are used. Sikka (2016, p. 256) observed: 'When gender differences are overlooked in [the] project planning phase, projects are unlikely to respond to women's needs and may even have negative consequences.' The consequences for many women and girls is that they have to use areas alongside the railways tracks, behind buses and other spaces for defecation and cope with daily threats of violence while trying to re-establish households and livelihoods.

Gender and Community-led Total Sanitation

The success of the CLTS¹⁰ approach in Kalyani, a town 55 km north of Kolkata, West Bengal, has shown that the role of local women is crucial because they can become powerful agents of change. This first successful application of the CLTS approach in an urban setting (i.e. two slums) has shown that by using health initiatives the challenge of providing sanitation for all can be met. Using a qualitative approach, Prabhakaran et al. (2016) gathered evidence that has shown a reduction in the disease burden for women along with improvements in their physical health, and their social and psychological well-being, as a result of this project. Women took the lead role in initiating the CLTS process and driving the behaviour change in the community. Prabhakaran et al. (2016) also reported an increased awareness of health and hygiene issues, and in particular menstrual hygiene. Having a toilet in every household also improved the social status of women because they no longer suffered from the stresses caused by the shame and loss of dignity in having to resort to OD. As one woman said, 'Everything is different now. Our lives have changed. We feel clean and live with dignity and self-respect ... We can never go back to how we used to live earlier' (Prabhakaran et al 2016, p. 27). The women now have more time available to organise their daily activities because they do not have to waste time walking to OD sites. For girls this has often meant getting to school on time.

Three years after the CLTS intervention began in 2006, both slums were declared open defecation free (ODF). The success of this project was due in part to the political will exercised by the chairman of the Kalyani municipality and the involvement of his team of public health professionals and ward councillors. The project also benefitted from the direct involvement by Karmal Kar who developed the CLTS approach. These factors pose challenges for the replication of this CLTS intervention in other urban settings.

New methods for achieving gender equality and sanitation outcomes

Two new approaches to gender and sanitation are reviewed here. The first is the idea of Gender Responsive Budgeting (GRB) analysis which can help to assess the 'gaps' in implementing commitments made by governments and then suggest ways to correct these omissions, or gender blindness. Another is a framework to explore the gender equity outcomes of WASH programmes which have brought about changes in roles and power relationships at various levels so that they can be used in the development of new sanitation policies and programmes. However, we found no documented examples of these new approaches being used in ongoing sanitation policies in either urban or rural settings.

Panda & Agarwala (2012) used GRB to test the hypothesis that sanitation project budgeting and planning impacts the lives of women and girls disproportionately as compared to men and boys. After examining the budgetary allocation for water and sanitation in resettlement colonies and *jhuggi jhopri* (JJ) clusters in Delhi they reported that there was utter confusion and a lack of effective collaboration amongst implementing agencies, and that service delivery did not reflect community needs. Some of the gender-

¹⁰ For a detailed discussion of CLTS and the methods used, see <http://www.communityledtotalsanitation.org/page/clts-approach>.

based disadvantages reported included incidents of sexual harassment at CTCs, the inconvenience for women of toilets not being open during the day, unsafe toilets that cause loss of women's dignity and privacy, diseases caused by unhygienic conditions at defecation grounds, girls missing school due to lack of sanitary facilities in school toilets, and women having to wait until dark to go for urination and defecation. They concluded that the 'various policies and schemes pertaining to urban water and sanitation in India can be categorised as "gender blind" since these do not recognise the gender-based disadvantages in accessing safe water supply and sanitation, sewerage and drainage' (Panda & Agarwala 2012, p. 1).

Carrard et al. (2013) have developed a framework for exploring gender equality outcomes of WASH programmes based on documented gender outcomes and empirical research in the Pacific (Fiji and Vanutu). Their proposed framework offers a 'structure for engaging with a broad set of gender equality outcomes relevant to WASH. It integrates critical areas of inquiry related to roles, relationships and power, and spans the various scales at which these play out from the household to community and beyond' (Carrard et al. 2013, p. 333). This framework, though, is not intended as a model for change but as a structure that can engage with gender outcomes and can therefore be used by policymakers, project designers and practitioners in developing and refining WASH approaches so that they have the potential to bring about gender equality outcomes. But one of the potential limitations of such a framework is that most of the documented gender outcomes of WASH projects have been rural based, so there are questions about applying it to urban settings.

CONCLUSION

This comprehensive review of the existing literature on gender inequalities and urban sanitation highlights the major gaps in evidence-based research, the lack of gender analysis in policies, programmes and projects, and the complexity of issues involved. Only 16 out of 68 articles and reports reviewed either address gender inequalities or use gender analysis in examining results from their research projects. This means there is an urgent need to develop gender-sensitive understandings of the heterogeneous nature of slums and informal settlements, the diversity of the people who live in them, and the relationships between them, if urban sanitation inequalities are to be addressed to meet Sustainable Development Goals. O'Reilly (2016) has argued that gender analysis is critical to understanding how the sanitation needs or toilet insecurity of poor women and girls change over their life-course, and vary greatly according to geographical location, culture, caste, workplaces, gender norms, ethnicity and religion. In addition, Carrard et al. (2013, p. 323) argue that as 'gender inequality operates at multiple levels and is embedded deep in social, economic and cultural structures and practices, [the] quality of life change associated with WASH improvements do not necessarily translate into more strategic gender equality outcomes, as is sometimes assumed'.

To understand how gender inequality operates at multiple levels across societies in the cities of the Global South in relation to sanitation access, there is a critical need for better and gender-aggregated data collection. Most national statistics, at best, often just provide a very broad overview

of sanitation facilities at the household level. They do not give a picture of the everyday lives of poor women and girls who have to develop strategies to cope with this lack of access to safe sanitation facilities. For many poor women and girls this specifically means finding ways to cope with gender-based violence that occurs around community/public toilets and OD sites. The collection of such gender-aggregated data, along with more qualitative studies, would enable researchers to explore the relationship between the unequal relations of power between women and men living in slums and informal settlements and sanitation access in more detail. Data and research is also needed on how this lack of access impacts poor women and girls over their life-course, as well as groups such as women working in informal sectors, those who have a disability, are ageing or living on pavements. Such new knowledge and understandings could then be used to develop more appropriate and effective strategies to reduce gender inequalities and urban sanitation.

This review also raises several research questions. The first is: are these experiences of gender-based violence and sanitation replicated in other Indian cities, particularly non-metropolitan and smaller cities or intermediate towns in different states? Subsequent questions could include the following. Are there any successful examples of slum communities which have managed to address these problems of harassment and violence for poor women and girls using community toilets? Is this everyday experience of gender-based violence and sanitation similar for poor women and girls living in slums in other countries of South Asia and in eastern Africa?

The second research question is: how do intra-household gender relations influence decision-making around building a private toilet in slum housing with unsecure tenure? Are household decisions to build a toilet based on the availability of resources/finances, changing gender relations due to female employment, length of time that the households have resided in a particular slum or availability of government subsidy? Who makes the decision about who in the household uses the toilet and why? There are instances where households build toilets only for emergency or night use as the cost of cleaning out a septic or cesspit is prohibitive, or water availability is a crucial issue.

The third question relates to studying how the sanitation needs of poor women living in slums and informal settlements change over their life-course. What are the consequences for women of coping with lack of adequate sanitation as they age? How do their everyday lives change across age groups when a household does install a private toilet? What are the socio-economic, health, well-being and aspirational changes which different age groups of women within a household experience? How do intra-household gender relations change when women have 24-hour access to a clean and safe toilet? How can sanitation policies and programmes be tailored to address the changing sanitation needs of women at different stages in their lives and reflect the cultural and geographic diversity that is often found in slums and informal settlements?

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Annotated bibliography

Compiled by Susan E Chaplin¹¹

EXISTING LITERATURE REVIEWS

Burt, Z, Nelson, K & Ray, I 2016, Towards gender equality through sanitation access, Discussion Paper No. 12, UN Women, New York, available at www.unwomen.org.

This discussion paper reviews the extensive literature on sanitation to show that inadequate access to this basic service prevents the realisation of a range of human rights and of gender equality. The authors recognise that 'dignity' is a highly culture- and gender-specific term. Therefore, they argue that sanitation for all - sanitation that services all genders equally - must be designed and planned explicitly for the unique needs of women and girls. The paper covers sanitation design, planning and financing for hygienic defecation, and for relieving oneself during the day at work or school. These needs are sometimes euphemistically referred to as nature's 'long call' (defecation) and 'short call' (urination); the absence of safe facilities for these needs disproportionately affects women and girls.

In addition, women and adolescent girls menstruate, and they need safe sanitation services to manage, hygienically and with dignity, this 'monthly call'. The authors review the findings of the small but rapidly growing literature on menstrual hygiene management, with emphasis on menstrual management and a girl's right to education. Finally, they review the work and life conditions of those working the 'back-end' of the sanitation system, such as manual scavengers and sanitation workers. This paper concludes that safe sanitation is a gateway service for dignity, health and gender equality. In particular, sanitation in public and shared spaces must become a priority planning sector for sustainable development.

Pearson, J & McPhedran, K 2008, 'A literature review of the non-health impacts of sanitation', *Waterlines*, Vol. 27 No. 1, pp. 48-61.

The health benefits are usually considered to be the most significant impacts of sanitation, but other factors are also important. This literature review examines both published and grey literature on the non-health impacts of sanitation. The main sections of this report summarise the social impacts of sanitation on women, adolescent girls, children, the disabled and the environment. Safe, private sanitation facilities can help women and girls

¹¹ All abstracts are taken from the respective articles and reports. Several articles have been included in this Annotated Bibliography which are not discussed in the review because they may be of interest to anyone reviewing this topic. I would like to thank Sama Khan who provided assistance with the compilation of this annotated bibliography.

to be secure and healthy, encourage girls' attendance in school past puberty, help preserve the dignity of disabled people and improve the environment.

Tilley, E, Bieri, S, & Kohler, P 2013, 'Sanitation in developing countries: a review through a gender lens, *Journal of Water Sanitation and Hygiene for Development*, Vol. 3, No. 3, pp. 298-314.

Sanitation has evolved from a purely technical discipline to one that includes social, environmental, economic and, increasingly, gender considerations. However, blurry notions of gender are frequently offered in the sanitation literature. Although it has been recognised that gender-responsive sanitation does not mean merely 'toilets for women', substantial alternatives are rarely debated. This paper structures its review of sanitation in developing countries along three lines: it starts by fine-tuning the concept of gender both from the academic and the practitioner's perspective, analyses relevant developments in gender-specific policies and programming, and finally reviews the most appropriate toilet rooms and menstrual hygiene technologies. The authors argue that strategies to make technologies gender-responsive need to be based upon a thorough analysis of the social arrangements of the intimate, and how these are negotiated and institutionalised in a specific context. A lack of robust gender-segregated data on sanitation policies and technologies and reductionist framings of gender are to blame for limited progress in verifying the need for, and impact of, gender-responsive sanitation. Technology and policy development and implementation would benefit from gender-considerate interpretations of shame, dignity, safety and status. Further progress could be achieved by improving the translation process between different academic framings of the sanitation crisis.

EVERYDAY EXPERIENCES: HOW WOMEN AND GIRLS COPE WITHOUT ACCESS TO ADEQUATE SANITATION

Bapat, M, & Agarwal, I 2003, 'Our needs, our priorities: women and men from the slums in Mumbai and Pune talk about their needs for water and sanitation', *Environment and Urbanization*, Vol. 15, No. 2, pp. 71-86.

This paper presents extracts from interviews with slum dwellers, primarily women, in Mumbai and Pune, and discusses the conditions they cope with every day with regard to water and sanitation, and the ways these conditions have changed over time. These women live in a variety of circumstances - on pavements, beside railway tracks, in swampy areas, on steep slopes - and this affects the particular problems they face. But in all cases, dealing with their needs for water and sanitation is a stressful and time-consuming challenge. These interviews provide the kinds of insights that rarely emerge in quantitative studies.

Bishnoi, A 2011, 'Toilet queue starts women's day in Delhi slums', *Women's New Service online*, 30 August, viewed 30 October 2016, <<http://womensenews.org/2011/08/toilet-queue-starts-womens-day-in-delhi-slums/>>.

This newspaper article describes how thousands of women living in resettlement colonies on the fringes of this Delhi start the day by trudging to the nearest water standpipe or going through a narrow, muddy lane to

queue up for a filthy community toilet. It takes women in colonies such as Bawana and Bhalswa - formed by mass evictions of squatters from other parts of the city - an average 15 or 20 minutes to reach the convenience. Being harassed by a male passer-by can be a frequent part of the ritual.

Buttenheim, AM 2008, 'The sanitation environment in urban slums: implications for child health', *Population and Environment*, Vol. 30, Nos. 1-2, pp. 26-47.

The author examines the effect of improved sanitation on child health in urban Bangladesh to assess the relative importance of household versus neighbourhood characteristics and of adult latrine usage versus safe disposal of children's faeces. Using fixed-effects regression, the paper calculates the change in weight-for-height in 153 children as a function of changes in latrine usage in the surrounding community. The use of longitudinal data allows children to act as their own controls, a stumbling point of many other sanitation evaluation studies using cross-sectional or case-control methods. Results provide strong evidence that children's toileting matters more than adult toileting behaviour in creating a safe, hygienic environment and reducing diarrheal disease. The author concludes that investments in sanitation improvements offer important externalities, and that sanitation programmes must encourage the safe disposal of children's faeces in order to produce maximum health gains.

Corburn, J & Karanja, I 2014, 'Informal settlements and a relational view of health in Nairobi, Kenya: sanitation, gender and dignity', *Health Promotion International*, Vol. 31, No. 2, pp. 258-269.

On an urban planet, slums or informal settlements present an increasing challenge for health promotion. The living conditions in complex informal settlements interact with how people navigate through their daily lives and political institutions to shape health inequities. This article suggests that only a relational place-based characterisation of informal settlements can accurately capture the forces contributing to existing urban health inequities and inform appropriate and effective health promotion interventions. The authors explore their relational framework using household surveys, spatial mapping and qualitative focus group data gathered in partnership with residents and non-governmental organisations in the Mathare informal settlement in Nairobi, Kenya. All data interpretation included participation with local residents and organisations.

The paper focuses on the inter-relationships between inadequate sanitation and disease, social, economic and human rights for women and girls, who it shows are most vulnerable to poor slum infrastructure. It suggests that this collaborative process results in co-produced insights about the meanings and relationships between infrastructure, security, resilience and health. The paper concludes that complex informal settlements require relational and context-specific data gathering and analyses to understand the multiple determinants of health and to inform appropriate and effective healthy city interventions.

Desai, R, McFarlane, C & Graham, S 2015, 'The politics of open defecation: informality, the body and infrastructure in Mumbai', *Antipode*, Vol. 47, No. 1, pp. 98-120.

This paper examines the politics of OD by focusing on everyday intersections of the body and infrastructure in the metabolic city, which produces profoundly unequal opportunities for fulfilling bodily needs. Specifically, it examines how OD emerges in Mumbai's informal settlements through everyday embodied experiences, practices and perceptions forged in relation to the materialities of informality and infrastructure. It does so by tracing the micro-politics of provision, access, territoriality and control of sanitation infrastructures; everyday routines and rhythms, both of people and infrastructures; and experiences of disgust and perceptions of dignity. It also examines OD as embodied spatial and temporal improvisations in order to investigate the socially differentiated efforts and risks that it entails. More broadly, the paper seeks to deepen understandings of the relationship between the body, infrastructure and the sanitary/unsanitary city.

Reddy, BS & Snehalatha, M 2011, 'Sanitation and personal hygiene: what does it mean to poor and vulnerable women?', *Indian Journal of Gender Studies*, Vol. 18, No. 3, pp. 381-404.

Sanitation is an important index of socio-economic development. Low sanitation levels lead to a host of diseases, making sanitation a key public health issue and concomitant of a clean water supply. Based on fieldwork in two urban slums of Hyderabad, Andhra Pradesh, this article points out that sanitation implies much more than defecation issues and that it converges on several important aspects of life, such as shame, dignity and personal hygiene. Women themselves defined what is appropriate sanitation. Cleaning tasks are primarily performed by women who receive little support from men. The paper argues for the need to give women a central role in decision-making, designing, planning and implementation of sanitation programmes. Women's definitions of the minimum standards of hygienic practices are clearly brought out by the study.

Sharma, A, Aasaavari, A & Anand, S 2015, 'Understanding issues involved in toilet access for women', *Economic and Political Weekly*, 22 August, Vol. L, No. 34 pp. 70-74.

While insufficient sanitation facilities often get represented in statistics and are reported in the literature on urban infrastructure planning and contested urban spaces, what is often left out is the everyday practice and experience of going to dysfunctional toilets, particularly by women. By analysing the practices and problems associated with toilet use from a phenomenological perspective, this article aims to situate the issue in the everyday lives of women in some of Delhi's slums.

Truelove, Y 2011, '(Re-)Conceptualizing water inequality in Delhi, India through a feminist political ecology framework', *Geoforum*, themed issue: New Feminist Political Ecologies, Vol. 42, No. 2, pp. 143-152.

This article demonstrates how a feminist political ecology (FPE) framework can be utilised to expand scholarly conceptualisations of water inequality in Delhi, India. The author argues that FPE is well positioned to complement and deepen urban political ecology work through attending to everyday practices and micro politics within communities. Specifically, she examines the embodied consequences of sanitation and 'water compensation' practices and how patterns of criminality are tied to the experience of water

inequality. An FPE framework helps illuminate water inequalities forged on the body and within particular urban spaces, such as households, communities, streets, open spaces and places of work. Applying FPE approaches to the study of urban water (and sanitation) is particularly useful in analysing inequalities associated with processes of social differentiation and their consequences for everyday life and rights in the city. An examination of the ways in which water practices are productive of particular urban subjectivities and spaces complicates approaches that find differences in distribution and access to be the primary lens for viewing how water is tied to power and inequality.

Water Supply and Sanitation Collaborative Council & Freshwater Action Network South Asia 2016, 'Leave No One Behind': Voices of Women, Adolescent Girls, Elderly, Persons with Disabilities and Sanitation Workforce, WSSCC & FANSA, viewed 19 October 2016, <<https://sanitationupdates.files.wordpress.com/2016/01/leave-no-one-behind-report-2016-wsscc-fansa.pdf>>.

This report summarises the sanitation and hygiene hopes and aspirations of thousands of women and men of different ages and physical ability, across rural and urban areas in eight South Asian countries. In these countries over a billion people are without safe sanitation. They represent individuals and groups rarely heard because they are seldom asked what their constraints are, what they need, how they cope and how they might design services differently to enable universal access and use.

World Health Organization 2005, 'A billion voices: listening and responding to the health needs of slum dwellers and informal settlers in new urban settings', World Health Organization, Kobe, viewed 12 February 2017, <www.who.int/social_determinants/resources/urban_settings.pdf>.

This is an analytic and strategic review paper prepared for the World Health Organization Commission in the Social Determinants of Health which takes a close look at urban slums, poverty and ill-health in the 21st century, reviews the evidence, and explores opportunities for synergy and positioning for action.

Working women

Bhasin, R 2015, 'Bombay HC steps in to ensure women's right to safe and clean toilet', *Indian Express*, viewed 10 November 2016, <<http://indianexpress.com/article/cities/mumbai/bombay-hc-steps-in-to-ensure-womens-right-to-safe-and-clean-toilet/>>.

This article reports on the Bombay High Court's instruction to municipal corporations to be more progressive and inclusive while designing urban infrastructure, proclaiming that women had equal right to safe and clean toilet at all convenient places. The court said public toilets were critical as 'any large infrastructure project to make cities liveable'. Highlighting health aspects like 'menstruation' and a range of uro-gynaecological problems faced by women, the two-member bench observed in a written order that providing such basic facilities was paramount to fulfilling the fundamental right to a dignified life.

Dey, J & Wilks, L 2015, 'The Indian elite has a toilet problem it doesn't want to see', *The Wire*, viewed 18 October 2016, <<http://thewire.in/16499/the-indian-elite-has-a-toilet-problem-it-doesnt-want-to-see/>>.

This piece deals with how concerns about hygiene are a flimsy cover for the casteism that governs middle-class household attitudes towards letting domestic workers use their toilet.

Doctor, V 2014, 'Number of women in workforce on the rise, but toilet facilities for them not keeping pace', *Economic Times*, viewed 20 October 2016, <<http://articles.economictimes.indiatimes.com/2014-08-23/news/531394611-women-staff-toilet-all-male>>.

Participation of women in the workplace has been steadily increasing, but facilities for them have not kept pace. As the article observes, speak to almost any woman who has worked for a few years and has experience of different workplaces and you will get many stories about inadequate, badly designed, poorly maintained and sometimes completely non-existent toilet facilities.

Maharaj, K 2016, 'Bombay High Court makes right to clean toilets a fundamental right for women in India', OxHRH Blog, 8 February, viewed 6 October 2016, <<http://ohrh.law.ox.ac.uk/bombay-high-court-makes-right-to-clean-toilets-a-fundamental-right-for-women-in-india/>>.

More and more women in India are joining the workforce and spending many hours away from home and on the road. This, however, does not relieve them of their household duties, including caring for children or elderly family, so when women go to work they make many stopovers, sometimes accompanied by young children. In such circumstances, it is extremely difficult for women to use dilapidated or absent toilet facilities. Moreover, in Mumbai, a city of more than 18 million people, there are no free toilets for women, yet free urinals for men run in the thousands. So, for a woman daily wage earner who makes Rs 100 (about £1) a day, going to the paid toilets at a cost of Rs 5 per visit becomes a financial burden, even more so if she has children or is differently abled or mentally disabled. This piece discusses the Bombay High Court's response to a PIL about the issue.

Patel, V 2013, 'Sanitation and dignity', *The Hindu*, viewed 26 October 2016, <www.thehindu.com/news/national/other-states/sanitation-and-dignity/article5160791.ece>.

In Mumbai, toilets for women, particularly in public spaces - whether at railway or bus stations, highways, industrial estates, educational institutions, public parks, tourist spots, public hospitals or markets - have been a perennial problem. Added to this apathy is the ramshackle state of the existing public conveniences - they are dirty, stinking and without running water. Poor infrastructure combined with an insufficient deployment of cleaning staff creates a nightmarish experience for those who are forced to visit such a facility. In a city of more than 18 million, while there are 2,849 free public urinals for men there are none for women.

To address this issue, 40 community-based organisations in Mumbai joined hands to mount the Right to Pee campaign that has been putting pressure on

the Brihanmumbai Municipal Corporation (BMC) to provide more women's toilets and refurbish the ones that are rundown in the 27 wards of the city. The article discusses this effort.

Rajaraman, D, Travasso, SM & Heymann, SJ 2013, 'A qualitative study of access to sanitation amongst low-income working women in Bangalore, India', *Journal of Water, Sanitation and Hygiene for Development*, Vol. 3, No. 3, pp. 432-440.

In India, access to sanitation amongst the urban poor remains low, and women are worse affected than men. Little is known about barriers to sanitation at the workplace, a location where working adults spend close to half of their waking hours. To explore access to sanitation facilities at the workplace amongst poor urban women, semi-structured interviews were conducted with 48 women working in low-income jobs in Bangalore. Access to sanitation varied by occupation group, with construction workers and domestic workers being the worst affected, and factory workers and street vendors better off. Consequences of inadequate access to sanitation included shame and fear related to urination and defecation in open areas, holding back the urge to urinate or defecate, walking significant distances during working hours to use a latrine, inability to maintain adequate menstrual hygiene at work, loss of pay as a result of missing work during menstruation and resentment towards employers who did not provide access to latrines. The findings reveal significant shortcomings in access to sanitation at the workplace for poor urban women. Extending legislation and improving the implementation of current regulation would improve access to sanitation at the workplace, as would increasing the coverage of public toilets.

Sommer, M, Chandraratna, S, Cavill, S, Mahon, T & Phillips-Howard, P 2016, 'Managing menstruation in the workplace: an overlooked issue in low- and middle-income countries', *International Journal for Equity in Health*, Vol. 15, No. 1, available at http://www.susana.org/_resources/documents/default/3-2667-7-1478684594.pdf

The potential menstrual hygiene management barriers faced by adolescent girls and women in workplace environments in low- and middle-income countries have been under-addressed in research, programming and policy. Despite global efforts to reduce poverty among women in such contexts, there has been insufficient attention to the water- and sanitation-related barriers, specifically in relation to managing monthly menstruation, that may hinder girls' and women's contributions to the workplace, and their health and well-being. There is an urgent need to document the specific social and environmental barriers they may be facing in relation to menstrual management, to conduct a costing of the implications of inadequate supportive workplace environments for menstrual hygiene management, and to understand the implications for girls' and women's health and well-being. This will provide essential evidence for guiding national policy makers, the private sector, donors and activists focused on advancing girls' and women's rights.

Venkatraman, T 2014, 'No concern for women safety in BMC's new toilet designs', *Indian Express*, 17 December, viewed on 30 December 2016, <<http://indianexpress.com/article/cities/mumbai/no-concern-for-women-safety-in-bmcs-new-toilet-designs/>>.

The article describes the objections to the toilet designs prepared by the Brihanmumbai Municipal Corporation (BMC) in 2014. Sanitation activists from the Right to Pee (RTP) movement have rubbished these while alleging that the civic body has ignored several safety aspects that the organisation has been fighting for. 'The civic body seems to be more concerned with the logo design and colours instead of women's safety. We had specifically said that RCC grills should not be used in the toilets because outsiders can peep inside, but that has not been taken into consideration. We had also asked for women attendants in all the toilets, but they have made provisions only for a male attendant. We didn't want women to face the road immediately after stepping out of the toilet and had asked for a cut-off lobby, but even that has been ignored by BMC,' said Supriya Sonar, convenor, RTP.

Venugopal, V, Rekha, R, Manikandan, K, Latha, K et al. 2016, 'Heat stress and inadequate sanitary facilities at workplaces: an occupational health concern for women?', *Global Health Action*, Vol. 9, pp. 1-9.

The study was carried out in Tamil Nadu to investigate the health implications of exposures to hot work environments and inadequate sanitation facilities at their workplaces for women workers. This cross-sectional study was conducted in three occupational sectors: brick manufacturing (two brick kilns in two districts of Tamil Nadu), one steel manufacturing industry, and agriculture fields (five agricultural fields in two different states in southern India) in 2014-2015. These sectors employed predominantly women for certain types of jobs which involved manual hard work. The women workers had direct heat exposures throughout the day and had long working hours, depending on the season, in brick and agriculture. The preliminary evidence suggests that the health of women workers is at risk due to occupational heat exposures and inadequate sanitation facilities at many Indian workplaces. Intervention through strong labour policies with gender sensitivity is the need of the hour to empower women, avert further health risks and also enhance productivity for the few million women workers who contribute immensely to the country's economy.

Differently abled women and girls, and elderly women

Groce, N, Bailey, R, Lang, R, Trani, JF & Kett, M 2011, 'Water and sanitation issues for persons with disabilities in low- and middle-income countries: a literature review and discussion of implications for global health and international development', *Journal of Water and Health*, Vol. 9, No. 4, pp. 617-627.

The critical importance of unrestricted access to clean drinking water and basic sanitation for all is highlighted in Millennium Development Goal 7, which calls for the reduction by half of the proportion of people without such access by 2015. Unfortunately, little attention has been paid to the needs of such access for the one billion people living with a disability worldwide, despite the fact that the right to equal access for all international development initiatives is guaranteed in the new United Nations Convention on the Rights of Persons with Disabilities. This paper reviews what is currently known about access to water and sanitation for persons with disabilities in low- and middle-income countries from the perspective of both international development and global health, and identifies existing gaps in research, practice and policy that are of

pressing concern if the water and sanitation needs of this large - and largely overlooked - population are to be addressed.

Sharma, M 2014, 'India lacks access to toilets for disabled women, highlights social activist Anjee Agarwal', *DNA*, viewed 20 October 2016, <www.dnaindia.com/locality/north-west-delhi/india-lacks-access-toilets-disabled-women-highlights-social-activist-anjee-agarwal-46545>.

Almost 15 per cent of world's population is disabled according to the data provided by the World Health Organization. Women are the most marginalised section of this percentage, most having no access to toilets in India. This article is an interview, on the occasion of World Toilet Day, with Anjee Agarwal, the director of Delhi-based Samarthyam, National Centre for Accessible Environments, who is leading the advocacy for the right of disabled women to use public toilets with safety and dignity.

WaterAid 2011, 'What the Global Report on Disability means for the WASH sector', *WaterAid*, viewed 23 October 2016, <www.wateraid.org/.../what-global-report-disability-means-for-WASH-sector.ashx>.

This report gives an overview of the information relevant to the WASH sector in the world's first report on disability. It also highlights how WaterAid is addressing the recommendations in the report, as well as where we could develop our approaches further. Disabled people represent the largest socially excluded group globally and most live without access to basic sanitary services, which can exacerbate impairments and poverty. However, so far disabled people have typically been excluded from development intervention and research.

White, S, Kuper, H, Itimu-Phiri, A, Holm, R, & Biran, A 2016, 'A qualitative study of barriers to accessing water, sanitation and hygiene for disabled people in Malawi', *PLoS ONE*, Vol. 11, No. 5, <https://doi.org/10.1371/journal.pone.0155043>

Globally, millions of people lack access to improved WASH facilities. Disabled people, disadvantaged both physically and socially, are likely to be among those facing the greatest inequities in WASH access. This study explores the WASH priorities of disabled people and uses the social model of disability and the World Health Organization's International Classification of Functioning, Disability and Health (ICF) framework to look at the relationships between impairments, contextual factors and barriers to WASH access. Through key informants, 36 disabled people and 15 carers from urban and rural Malawi were purposively selected. This study found that being female, being from an urban area and having limited wealth and education were likely to increase the number and intensity of the barriers faced by an individual. In addition, this study found that body function limitations such as incontinence, pain and an inability to communicate WASH needs are in and of themselves significant barriers to adequate WASH access. Understanding these access barriers is important for the WASH sector at a time when there is a global push for equitable access.

Adolescent girls

Abrahams, N & Mathews, RP 2006, 'Intersections of sanitation, sexual coercion and girls' safety in schools', *Tropical Medicine and International Health*, Vol. 11, No. 5, pp. 75-756.

This article explores safety for girls in schools, particularly how girls perceive and negotiate dangers and risks associated with the use of toilets. Participatory action research over a period of three days at three schools in South Africa was used. Informants were 81 girls 16 years and older, teachers and other relevant school personnel. Data was collected through focus group discussions, in-depth interviews, participant observation, mapping and photography.

The results showed that the schools either had inadequate toilets or no sanitation. Both their use and their avoidance were risky for female students and discouraged hygienic practices. Experience of sexual violence from male students and teachers was a major theme, but unrelated to school toilets. Male teachers used various strategies and opportunities to gain sexual access to the girls and previous experience of victimisation prevented the girls from reporting them. The authors conclude that to ensure a healthy school environment that promotes gender equality, all threats to safety, including the physical and social environment, must be considered.

Birdthistle, I, Dickson, K, Freeman, M & Javidi, L 2011, 'What impact does the provision of separate toilets for girls at schools have on their primary and secondary school enrolment, attendance and completion? A systematic review of the evidence', *Social Science Research Unit, Institute of Education, University of London*.

The education of girls is recognised as an investment with many valuable returns, including the health and economic prosperity of women, their families and nations. Despite recent progress in increasing girls' enrolment, statistics from 157 countries indicate that only one country out of three had reached gender parity in both primary and secondary education in 2008. Thus there is much interest in identifying the most effective ways of increasing girls' enrolment and completion, including school sanitation facilities, which have been cited as a factor that can impede a girl's access to their education.

The primary aim of this systematic review was to identify and synthesise evidence of the impact of separate toilets for girls on their enrolment and attendance in schools. The authors did not find any studies that were designed to assess the impact of separate-sex toilets.

Dasra 2015, 'Dignity for her: empowering India's adolescent girls through improved sanitation and hygiene', *Dasra, New Delhi*, viewed 10 November 2016 <[http://www.dasra.org/sites/default/files/Dignity For Her - Part-I.pdf](http://www.dasra.org/sites/default/files/Dignity%20For%20Her%20-%20Part-I.pdf)>.

This report focuses on India's adolescent girl who, it argues, has the odds already stacked overwhelmingly against her - a patriarchal social system that discriminates against her; the resultant maze of exploitation and denied opportunity; the everyday shadow of sexual assault. Tipping that scale is an added handicap - poor access to sanitation, which has consequences that

will play out across the span of her lifetime, affecting her identity, health and potential.

Dasra advocates that adolescent girls must be understood as critical end users rather than beneficiaries of sanitation and hygiene services. This involves a shift from the commonly prevailing top-down approach to a targeted one that studies the distinct needs of adolescent girls and offers responsive solutions, while keeping them engaged through the process. In making this shift, non-profits and the government can learn much from the business sector about how it effectively targets a market segment: studying, appealing and responding to the distinct aspirations of the segment, rather than offering a one-size-fits-all product or service.

Jewitt, S & Ryley, H 2015, 'Gendered priorities for "improved" sanitation: insights from Kisumu, Kenya', Paper presented at 38th WEDC International Conference, 27-31 July 2015, Loughborough University, UK, viewed 10 November 2016, <<http://wedc.lboro.ac.uk/resources/conference/38/Jewitt-2133.pdf>>.

This paper explores how official concepts of 'improved' sanitation often fail to reflect the priorities of female users. As the health benefits associated with improved sanitation cannot be fully realised until all potential user groups habitually utilise it, specific user preferences/constraints need to be better understood and catered for. Drawing on empirical work in nine schools in Kisumu, Kenya, the paper focuses attention on gendered sanitation priorities including menstrual hygiene management, gender-based violence and broader safety, privacy and dignity issues associated with accessing and using sanitation facilities.

Jewitt, S & Ryley, H 2014, 'It's a girl thing: menstruation, school attendance, spatial mobility and wider gender inequalities in Kenya', *Geoforum*, Vol. 56, September, pp. 137-147.

Recent attention has been drawn to possible linkages between poor sanitation in sub-Saharan African schools and low attendance rates amongst post-pubescent girls. In particular, questions have been raised about the influence of menstruation and access to sanitary products on schoolgirl absenteeism but research on this topic is scarce. Moreover, the few detailed empirical studies that have been conducted in sub-Saharan Africa on this topic have produced contradictory results. These uncertainties coupled with theories of how concepts of pollution and taboo are used to construct or police spatial boundaries (and maintain power relations within society) provide an interesting context for examining everyday geographies of menstruation.

Kisumu, Kenya, provides the context for the study which utilises a feminist political ecology framework to investigate cultural and spatial limitations associated with menstruation and puberty. Drawing on schoolgirls' lived experiences, the study illustrates how emotional geographies of puberty and menstruation are productive of and help to reproduce gender inequalities in mobility and access to social capital resources (especially education). At the same time, it shows how poverty coupled with low levels of sexual and reproductive health and rights education can exacerbate gendered bodily inequalities as girls face an increased risk of sexual exploitation when they reach puberty.

Nallari, A 2015, 'All we want are toilets inside our homes! The critical role of sanitation in the lives of urban poor adolescent girls in Bengaluru, India', *Environment and Urbanization*, Vol. 27, No. 1, pp. 73–88.

This paper describes how lack of access to adequate sanitation facilities affects the lives of poor adolescent girls in urban India. It draws specifically on the experiences of four adolescent girls, each living in one of four settlements in Bengaluru, India, and conversations with a larger group of girls. Findings reveal that where sanitation facilities are sorely lacking, adolescent girls face many deprivations (education, free time, privacy and independent mobility) and risks (sexual harassment and assault, health risks, etc.), and that this inadequacy can be a structural pathway for cyclical gender-based disempowerment and injustice.

Sommer M, Caruso BA, Sahin M, Calderon T, Cavill S, Mahon T, et al. 2016, 'A time for global action: addressing girls' menstrual hygiene management needs in schools', *PLoS Med*, Vol. 13, <https://doi.org/10.1371/journal.pmed.1001962>

The lack of adequate guidance, facilities and materials for girls to manage their menstruation in school is a neglected public health, social and educational issue that requires prioritisation, coordination and investment. There are growing efforts from academia, the development sector and beyond to understand and address the challenges facing menstruating schoolgirls in low- and middle-income countries. A body of research has documented menstruating girls' experiences of shame, fear and confusion across numerous country contexts and the challenges girls face in attempting to manage their menstruation with insufficient information, a lack of social support, ongoing social and hygiene taboos, and a shortage of suitable water, sanitation and waste disposal facilities in school environments. The accruing evidence reveals the gender discriminatory nature of many school environments, with female students and teachers unable to manage their menstruation with safety, dignity and privacy, negatively impacting their abilities to succeed and thrive within the school environment. Poor school attainment reduces girls' economic potential over the life-course, impacts population health outcomes, and also extends to girls' sexual and reproductive health outcomes, self-esteem and sense of agency.

Women living on pavements or homeless

Democracywatch 2014, 'A study on the life and livelihood of women pavement dwellers of Dhaka city', viewed 14 February 2017, <www.dwatch-bd.org/ggtp/Research%20Reports/livelihood.pdf>.

Street dwellers are among the most deprived people in urban areas, in terms of living conditions, access to basic facilities and health indicators. Thousands of homeless, destitute street dwellers live day after day on the sidewalks and pavements of Dhaka city. It is a sight that has become so common and widespread that this disadvantaged segment of the population largely goes unnoticed. Adults and children alike are daily subjected to dangers and adversities on the streets, natural elements like rain and cold, police brutalities, not to mention the indignity and contempt of society. The objective of the study is to identify the changing pattern of life and livelihood of women pavement dwellers in Dhaka city. More specifically, the

aim is to identify their pattern of life and livelihood, the real scenario of present and past life, the reasons behind migration, the problems that the women pavement dwellers face, and their needs and aspirations.

Joshi, D & Morgan, J 2007, 'Pavement dwellers' sanitation activities—visible but ignored', *Waterlines*, Vol. 25, No. 3, pp. 19–22.

Pavement dwellers are often invisible to the government, development partners and researchers, even though they comprise 2 percent of the urban population and their entire lives are on full display to passers-by every day. Shelter and security, convenience and privacy are considered essential for all, yet even these are lacking for the poorest of the urban poor.

Patel, S 1990, 'Street children, hotel boys and children of pavement dwellers and construction workers in Bombay: how they meet their daily needs', *Environment and Urbanization*, Vol. 2, No. 2, pp. 9–26.

This study describes the situation of 'street children, hotel boys and children of pavement dwellers and construction workers in Bombay'. For instance, where they wash, defecate, sleep and who helps them when they are ill. It describes the circumstances which lead to children being in such a situation and the inadequacies of public provision in meeting their needs; and how involving these children in the survey became a means of establishing better contact between them and the government agencies and voluntary organisations seeking more effective public responses to their needs and problems.

Rawat, P 2013, 'Findings of a socio-economic survey of pavement dwelling families in central Kolkata', viewed 14 February 2017, <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2532309>.

This paper is based on one of two socio-economic surveys that took place in August and October of 2013 respectively. The first survey covered 30 pavement dwellers living in College Street, central Kolkata. The first survey was preceded by a few field tests, and used a quantitative household questionnaire that pertained to basic socio-economic indicators. This survey was preceded by field tests in College Street itself. The second survey covered 196 households living in various parts of central Kolkata. It was also designed to cover the individuals within households, and along with data on 196 households it has data on the 524 individuals within it. This survey was also preceded by extensive field testing to expose faults in the questionnaire. This paper presents the findings of the second survey.

Uddin, SMN, Walters, V, Gaillard, JC, Hridi, SM & McSherry, A 2016, 'Water, sanitation and hygiene for homeless people', *Journal of Water and Health*, Vol. 14, No. 1, pp. 47–51.

This short piece provides insights into WASH facilities for homeless people through a scoping study conducted in Dhaka, Bangladesh. It investigates homeless access to WASH through the lens of a rights-based approach. It demonstrates that homeless people's denial of their right to WASH reflects their marginal position in society and an unequal distribution of power and opportunities. The study ultimately suggests a rights-based approach to deal with the root causes of discrimination and marginalisation rather than just the symptoms. For the homeless, who not only lack substantive rights but

also the means through which to claim their rights, an integrated rights-based approach to WASH offers the possibility for social inclusion and significant improvements in their life conditions. Given the unique deprivations of homelessness it is argued that in addressing the lack of access to adequate WASH for homeless people the immediate goal should be the fulfilment and protection of the right to adequate shelter.

Walters, V 2014, 'Urban homelessness and the right to water and sanitation: experiences from India's cities', *Water Policy*, Vol. 16, No. 4, pp. 755-772.

Improving access to water and sanitation for vulnerable groups has been a significant development priority in recent decades and this has been coupled with calls for water and sanitation to be recognised as fundamental human rights. However, to date there has been very limited attention paid to the right to water and sanitation for homeless people, despite their high vulnerability to a range of water and sanitation insecurities. Drawing on empirical data from the Indian cities of Delhi and Bangalore, this paper examines homelessness and the right to water and sanitation. It highlights the everyday practices and experiences of homeless people in their efforts to access water and sanitation, and sheds light on some of the factors that contribute to their water and sanitation insecurity. It concludes that addressing the human right to water and sanitation for homeless people will require going beyond a technical and sector approach, to the more challenging task of tackling the complex factors that create and sustain their vulnerability and marginality in urban spaces.

GENDER-BASED VIOLENCE AND TOILET VULNERABILITIES

House, S, Ferron, S, Sommer, M & Cavill, S 2014, *Violence, Gender & WASH: A Practitioner's Toolkit - Making Water, Sanitation and Hygiene Safer through Improved Programming and Services*, London, WaterAid/SHARE, viewed 29 November 2016, <<http://violence-wash.lboro.ac.uk/>>.

This toolkit has been developed in response to an acknowledgement that although the lack of access to appropriate WASH services is not the root cause of violence, it can lead to increased vulnerabilities to violence of varying forms. Instances have been reported from a wide range of contexts, often anecdotally but with regular occurrence, with a number of targeted studies confirming the same.

By recognising both the risks of violence associated with WASH and the potential benefits of WASH, this toolkit aims to shine a light on this problem and encourage practitioners to recognise their capacity to make WASH safer and more effective. Effectively considering gender in the process of establishing sustainable WASH services can also contribute to the process of longer-term change in attitudes and relationships between men and women. This in turn can contribute to a transformative process that can help reduce vulnerabilities to violence.

However, for WASH actors, particularly for those working in the longer-term developmental contexts, there has been a lack of clarity on the practical steps that can be taken so that they can contribute to reducing

vulnerabilities through improved policy and programming. This toolkit aims to fill this gap.

O'Reilly, K 2016, 'From toilet insecurity to toilet security: creating safe sanitation for women and girls', *WIRES Water*, Vol. 3, pp. 19–24.

For women and girls in low-income areas, the consequences of inadequate sanitation include fear of harassment, experiences of violence and psychosocial stress. When safe, usable toilets are not available, women and girls face three types of toilet insecurity: (1) the material reality for many women and girls that they do not have access to a toilet; (2) the risk of venturing out for open defecation if there is no toilet; and (3) having access to a public toilet, but one that is unusable (e.g. filthy) or unsafe (e.g., insufficient lighting), so that women and girls accept the risk of going for OD.

Sommer, M, Ferron, S, Cavill, S, & House, S 2014, 'Violence, gender and WASH: spurring action on a complex, under-documented and sensitive topic', *Environment and Urbanization*, Vol. 27, No. 1, pp. 105–116.

The global community of WASH researchers, practitioners and policymakers has to date inadequately addressed the challenge of vulnerability to violence in relation to access to water and sanitation in development and humanitarian emergency contexts. Reasons may include the lack of valid and reliable documentation of girls', boys', women's and men's experiences of violence while accessing water and/or sanitation facilities; the sensitivity of the topic, with secrecy around individuals' experiences of violence and their sanitation needs further hindering the collection of reliable data; the complexity of understanding the gendered dimensions of vulnerability to violence, with girls and women at least anecdotally reported to be more likely to experience violence in relation to WASH; and the likelihood that many WASH practitioners lack training in gender and violence, affecting their ability to deliver adequate programming and evaluation. In an effort to encourage increased action and learning on the intersection of gender, violence and WASH, a review of the existing evidence and practice was conducted. Findings indicate the need for more systematic, reliable, and ethically conducted monitoring and learning on this topic to build a more solid evidence base, while also refining key principles for improved policy and programming.

Urban India

Belur, J, Parikh, P, Daruwalla, N, Joshi, R & Fernandes, R 2017, 'Perceptions of gender-based violence around public toilets in Mumbai slums', *International Journal of Comparative and Applied Criminal Justice*, Vol. 41, Nos. 1-2, pp. 63–78.

The lack of adequate public toilets and associated gender-based violence around their use is a matter of concern in many developing countries and has recently come to the forefront of the political agenda and media discourse in India. Previous research suggests the absence of lighting, inadequate provision of basic sanitation, poor design and siting of toilets, and lack of police presence in slums as facilitators for violence against women. However, the evidence is often anecdotal and usually unsystematic. The exact extent of crimes against women in these circumstances is unknown

because, unsurprisingly, women in slums rarely report crimes to the police, either due to fear or lack of access.

The research reported in this paper gauges women's perception and experience of crime and violence around different types of public toilets in two slum areas in Mumbai, India. A survey of 142 households indicated that although women's fear of crime was higher than their actual experience, the perception of insecurity was not uniform for all toilet types and locations. Findings also indicated that there was at least minimal provision of toilet facilities, basic security features, water and electric supply in the research sites. Furthermore, greater police presence and previous contact with the police in one slum area led to greater confidence in reporting offences to the police as compared to the other. Overall, better provision of lighting and regular police patrols were considered by a majority of those surveyed to reduce fear of crime around toilets.

Jadhav, A, Weitzman, A & Smith-Greenway, E 2016, 'Household sanitation facilities and women's risk of non-partner sexual violence in India', *BMC Public Health*, Vol. 16, DOI: 10.1186/s12889-016-3797-z.

Globally, one in ten individuals practises OD. Despite media speculation that it increases women's risk of sexual violence, little empirical evidence supports the claims. This report investigates the relationship between household sanitation facilities and women's risk of non-partner sexual violence (NPSV) in India, where nearly half of the population lives without a pit or toilet.

This study used the most recent NPSV data, from the National Family Health Survey-III, to estimate logistic regression models of the effects of household sanitation facilities (toilet, pit or none) on NPSV in the last year among women who have resided in their current home for one year or more. These effects are estimated net of other socio-economic factors, compared to effects of household sanitation facilities on child diarrhoea, and, as a falsification test, compared to effects of household sanitation facilities on intimate partner sexual violence (IPSV) in the last year.

The results were that net of their socio-economic status, women who use OD are twice as likely to face NPSV as women with a household toilet. This is twice the association between OD and child diarrhoea. The results of this falsification test indicate that OD is not correlated with IPSV, thus disconfirming a simultaneous selection of women into OD and sexual violence.

Kulkarni, S, O'Reilly, K & Bhat, S 2014, 'Sanitation vulnerability: women's stress and struggles for violence-free sanitation', viewed 26 January 2016, <<www.sanitation.indiawaterportal.org/.../Sanitation%2520Vulnerability%2520>>.

In this unpublished paper the authors seek to unravel the particularities, contexts and multi-scalar relationships behind gendered violence and sanitation. They move beyond abstractions such as 'right to sanitation' and 'sanitation deprivation' to ground the absence, or inadequacy, of sanitation in the everyday struggles and psychosocial stress of women impacted by this reality. By analysing the stories of slum-dwelling urban women they offer insights into what the absence of sanitation means for poor women living in

India's slums. What emerges from the analysis of women's words is an understanding of both their individual struggles and the broad political relationships that hold India's gendered urban sanitation crisis in place. In particular, there are tensions between the needs of the urban poor and state-led neoliberal development agendas. This paper explores how these tensions are experienced differently by different slum-dwelling women.

Lennon, S 2011, 'Fear and anger: perceptions of risks related to sexual violence against women linked to water and sanitation in Delhi, India', Briefing Note, SHARE (Sanitation and Hygiene Applied Research for Equity) & WaterAid, UK.

The link between a lack of access to water and sanitation facilities and sexual violence against women is not well known and to date has received insufficient attention. This document attempts to highlight this link within the context of urban slums in Delhi, and suggests how this problem can be addressed. Men and women experience differently the fulfilment of fundamental human rights such as access to water and sanitation services. The lack of access to sanitation and drinking water affects women and girls disproportionately, by impacting their health and dignity, contributing to their vulnerability, and thereby frustrating efforts to empower women to lead a healthy and economically productive life. Women without water supplies and toilets within their homes are potentially vulnerable to sexual violence when travelling to and from public facilities, when using public facilities and when they have to defecate in the open in the absence of any amenities.

McFarlane, C 2015, 'The everywhere of sanitation: violence, oppression and the body', viewed 19 October 2016, <www.opendemocracy.net/openindia/colin-mcfarlane/everywhere-of-sanitation-violence-oppression-and-body>.

Prime Minister Narendra Modi has had nothing to say on the attacks in Uttar Pradesh (in 2015) on two young girls, but a debate has emerged in India about how a rich country can lag so dangerously far behind its competitors in providing basic safe and clean sanitation. For the sad and shocking truth is that this is the latest more extreme example of entrenched daily violence emergent from inequalities in gender, caste, class and sanitation in India. Poor sanitation conditions are not the cause of caste-based gendered violence, but the denial of sanitation facilitates the toxic relationship between vulnerability and violence more profoundly than any other facet of Indian life. For millions of Indian women, everyday life is a series of struggles, anxieties and risks around sanitation.

SHARE (Sanitation and Hygiene Applied Research for Equity) 2015, 'Sanitation vulnerabilities: women's stresses and struggles for violence free sanitation', Research Briefing Note, viewed 20 February 2016, <www.sharereseach.org/research/sanitation-vulnerability-women%E2%80%99s-stress-and-struggles-violence-free-sanitation>.

The SHARE Research Consortium and the Water Supply and Sanitation Collaborative Council (WSSCC) formed a research partnership in 2013 to investigate the specific impact of inadequate access to WASH facilities on women and girls in India and Bangladesh. All four studies converge on the lack of safe and acceptable choices for women and girls. Links between unsafe sanitation and women and girls' poor health in terms of stress and infections are raised and major evidence gaps are highlighted. The higher incidence of reproductive tract infections linked to poor menstrual hygiene management

for socio-economically deprived groups is striking. Also remarkable is the lack of WASH facilities accessible by pregnant women.

Tiwari, P 2015, 'Toilet torture in Mumbai's slums: when will our political and administrative leaders end the daily assaults on women's safety and dignity?', Observer Research Foundation, Mumbai, viewed 20 January 2016, <<http://sanitation.indiawaterportal.org/sites/default/files/attachment/Toilet-Torture-by-Payal-Tiwari.pdf>>

While the burden of bad sanitation affects both men and women, its consequences are far worse for women. Bad sanitation results not only in poor health but also limits women's mobility and freedom, affects their safety and also prevents women from living a dignified life. This study is an attempt to give voice to all the faceless women who go through this ordeal every day. The study represents all those women who start their day standing in long queues outside the slum toilets and are deprived of many basic human rights starting with the right to live with dignity and the right to security. Through testimonials an attempt has been made to capture the realities of thousands of women living in Mumbai slums and present their problems through pictures, interviews and discussions. The study is specific to community toilets and does not include public toilets because the women living in the slums have no choice except to use the toilets in their slums, day after day.

Eastern and southern Africa

Amnesty International 2010a, 'Risking rape to reach a toilet: women's experiences in the slums of Nairobi, Kenya', viewed on 20 October 2016, <<https://www.amnesty.org/en/documents/AFR32/006/2010/en/>>.

Women and girls living in the informal settlements and slums of Nairobi live their daily lives under constant threat of violence: in their own homes, at work and in public spaces. Sanitation facilities inside slums are few and far between and residents are forced to walk through unsafe areas to reach the nearest communal facilities. Women and girls are some of the most vulnerable because they risk sexual violence as well as assault or mugging as they travel to and from these facilities. This report identifies some major factors contributing to this dangerous situation: the shortage and inaccessibility of sanitation facilities in Nairobi's slums and the lack of recognition of women's vulnerability in the limited improvements that have been made; and the low police presence in the slums, along with a lack of faith in the justice system and low reporting and prosecution of gender-based violence. Recommendations include: ensuring landlords construct bathrooms close to each house so that residents of slums and settlements have equal protection under the Public Health Act; increasing policing in consultation with residents; improving channels of communication so that women feel able to report crime; and ensuring that gender-based violence is investigated and perpetrators brought to justice.

Amnesty International 2010b, *Insecurity and Indignity: Women's Experience in the Slums of Nairobi, Kenya*, Amnesty International Publications, London.

This report shows that women and girls living in informal settlements in Nairobi are particularly affected by the lack of adequate access to sanitation facilities for toilets and bathing. Not only do women have

different physical needs from men, they also have a greater need of privacy. Inadequate and inaccessible toilets and bathrooms, as well as the general lack of effective policing and insecurity make women even more vulnerable to rape and other forms of gender-based violence. Poverty is both a consequence and cause of violence because many women suffer physical, sexual or psychological violence and lose income and their productive capacity as a result. Violence against women also impoverishes their families, communities and societies.

Gonsalves, GS, Kaplan, EH, Paltiel, AD 2015, 'Reducing sexual violence by increasing the supply of toilets in Khayelitsha, South Africa: a mathematical model', *PLoS ONE*, Vol. 10, No. 4, <https://doi.org/10.1371/journal.pone.0122244>

Sexual violence is a major public health issue, affecting 35 per cent of women worldwide. Major risk factors for sexual assault include inadequate indoor sanitation and the need to travel to outdoor toilet facilities. This study estimates how increasing the number of toilets in an urban township (Khayelitsha, South Africa) might reduce both economic costs and the incidence and social burden of sexual assault. It develops a mathematical model that links risk of sexual assault to the number of sanitation facilities and the time a woman must spend walking to a toilet. The report defines a composite societal cost function, comprising both the burden of sexual assault and the costs of installing and maintaining public chemical toilets. By expressing total social costs as a function of the number of available toilets, it identifies an optimal (i.e. cost-minimizing) social investment in toilet facilities.

According to the study, there are currently an estimated 5600 toilets in Khayelitsha. This results in 635 sexual assaults and US\$40 million in combined social costs each year. Increasing the number of toilets to 11,300 would minimise total costs (\$35 million) and reduce sexual assaults to 446. Higher toilet installation and maintenance costs would be more than offset by lower sexual assault costs. Probabilistic sensitivity analysis shows that the optimal number of toilets exceeds the original allocation of toilets in the township in over 80 per cent of the 5000 iterations of the model.

The report deduces that improving access to sanitation facilities in urban settlements will simultaneously reduce the incidence of sexual assaults and overall cost to society. Since this analysis ignores the many additional health benefits of improving sanitation in resource-constrained urban areas (e.g. potential reductions in waterborne infectious diseases), the optimal number of toilets identified here should be interpreted as conservative.

Winter, SC & Barchi, F 2106, 'Access to sanitation and violence against women: evidence from Demographic Health Survey (DHS) data in Kenya', *International Journal of Health Research*, Vol. 26, No. 3, pp. 91-305.

Violence against women (VAW) is a serious public health and human rights concern. Literature suggests sanitation conditions in developing countries may be potential neighbourhood-level risk factors contributing to VAW, and that this association may be more important in highly socially disorganised neighbourhoods. This study analysed the data of Kenya's Demographic Health Survey of 2008 and found that women who primarily practise OD, particularly

in disorganised communities, had higher odds of experiencing recent non-partner violence. This study provides quantitative evidence of an association between sanitation and VAW that is attracting increasing attention in media and scholarly literature throughout Kenya and other developing countries.

Health and well-being impacts of gender-based violence

Corburn, J & Hildebrand, C 2015, 'Slum sanitation and the social determinants of women's health in Nairobi, Kenya', *Journal of Environmental and Public Health*, <http://dx.doi.org/10.1155/2015/209505>

Inadequate urban sanitation disproportionately impacts the social determinants of women's health in informal settlements or slums. The impacts on women's health include infectious and chronic illnesses, violence, food contamination and malnutrition, economic and educational attainment, and indignity. This study uses household survey data to report on self-rated health and socio-demographics, housing and infrastructure conditions in the Mathare informal settlement in Nairobi, Kenya. It combines quantitative survey and mapping data with qualitative focus group information to better understand the relationships between environmental sanitation and the social determinants of women and girls' health in the Mathare slum. The report finds that an average of 85 households in Mathare share one toilet, only 15 per cent of households have access to a private toilet and the average distance to a public toilet is over 52 metres. Eighty-three per cent of households without a private toilet report poor health. Mathare women report violence (68 per cent), respiratory illness/cough (46 per cent), diabetes (33 per cent), and diarrhoea (30 per cent) as the most frequent physical burdens. Inadequate, unsafe and unhygienic sanitation results in multiple and overlapping health, economic and social impacts that disproportionately impact women and girls living in urban informal settlements.

Hulland, KRS, Chase, RP, Caruso, BA, Swain, R, Biswal, B & Sahoo, KC 2015, 'Sanitation, stress, and life stage: a systematic data collection study among women in Odisha, India', *PLoS ONE*, Vol. 10, No. 11, <https://doi.org/10.1371/journal.pone.0141883>

Emerging evidence demonstrates how inadequate access to water and sanitation is linked to psychosocial stress, especially among women, forcing them to navigate social and physical barriers during their daily sanitation routines. The study examines sanitation-related psychosocial stress (SRPS) across women's reproductive lives in three distinct geographic sites (urban slums, rural villages and rural tribal villages) in Odisha, India. It explores the daily sanitation practices of adolescent, newly married, pregnant and established adult women (n = 60) and identifies stressors encountered during sanitation. Responding to structured data collection methods, women ranked seven sanitation activities (defecation, urination, menstruation, bathing, post-defecation cleaning, carrying water and changing clothes) based on stress (high to low) and level of freedom (associated with greatest freedom to having the most restrictions). Women then identified common stressors they encountered when practising sanitation and sorted stressors in constrained piles based on frequency and severity of each issue. The constellation of factors influencing SRPS varies by life stage and location. Overall, sanitation behaviours that were most restricted (i.e.

menstruation) were the most stressful. Women in different sites encountered different stressors, and the level of perceived severity varied based on site and life stage. Understanding the influence of place and life stage on SRPS provides a nuanced understanding of sanitation, and may help identify areas for intervention.

Sahoo, KC, Hullahd KRS, Caruso, BA, Swain, R, Freeman, MC, Panigrahi, P & Dreibelbis, R 2015, 'Sanitation-related psychosocial stress: a grounded theory study of women across the life-course in Odisha, India', *Social Science & Medicine*, Vol. 139, pp. 80-89.

While sanitation interventions have focused primarily on child health, women's unique health risks from inadequate sanitation are gaining recognition as a priority issue. This study examines the range of sanitation-related psychosocial stressors during routine sanitation practices in Odisha, India. Between August 2013 and March 2014, the authors conducted in-depth interviews with 56 women in four life stages - adolescent, newly married, pregnant and established adult women - in three settings - urban slums, rural villages and indigenous villages. Using a grounded theory approach, the study team transcribed, translated, coded and discussed interviews using detailed analytic memos to identify and characterise stressors at each life stage and study site. It found that sanitation practices encompassed more than defecation and urination and included carrying water, washing, bathing, menstrual management and changing clothes. During the course of these activities, women encountered three broad types of stressors - environmental, social and sexual - the intensity of which were modified by the woman's life stage, living environment and access to sanitation facilities. Environmental barriers, social factors and fears of sexual violence all contributed to sanitation-related psychosocial stress. Although women responded with small changes to sanitation practices, they were unable to significantly modify their circumstances, notably by achieving adequate privacy for sanitation-related behaviours. A better understanding of the range of causes of stress and adaptive behaviours is needed to inform context-specific, gender-sensitive sanitation interventions.

GENDER AND URBAN SANITATION: POLICIES, PROGRAMMES AND PROJECTS

Burra, S, Patel, S & Kerr, T 2003, 'Community-designed, built and managed toilet blocks in Indian cities', *Environment and Urbanization*, Vol. 15, No. 2, pp. 11-32.

This paper describes the ten-year programme of community designed, built and managed toilet blocks undertaken by urban poor federations and women's cooperatives, with support from the Indian NGO SPARC. This programme has provided hundreds of thousands of poor urban dwellers with much improved sanitation and facilities for washing; it has also demonstrated how such provision is affordable and manageable for all Indian cities. This programme

has also demonstrated to city authorities the capacity and competence of urban poor organisations, and helped change the relationship between the residents of slums and local government agencies.

The paper begins by explaining why sanitation has been neglected, and describes the inadequacies in government sanitation programmes. It then describes the first experiments with community sanitation and the difficult negotiations in many cities, including Mumbai, Kanpur and Bangalore. The paper goes on to discuss the major community toilet programmes that developed in Pune and Mumbai. It highlights the innovations that allowed these to work better than previous public toilet blocks, the reasons why the urban poor organisations took on these projects, the lessons learnt and the ways in which community toilet blocks helped address other problems faced by the urban poor.

Fisher, J 2008, Women in water supply, sanitation and hygiene programmes: proceedings of the ICE, *Municipal Engineer*, Vol. 161, No. 4, pp. 223–229.

This paper demonstrates the fundamental linkages between the United Nations' third Millennium Development Goal (MDG) 'to promote gender equality and to empower women' and MDG 7 'to ensure environmental sustainability', with target 10 'to halve the proportion of people without access to safe drinking water and sanitation by 2015'. A synthesis of the evidence gathered for the Water Supply and Sanitation Collaborative Council (WSSCC) shows the connections between women's well-being and water supply, sanitation facilities and hygiene practice. The paper shows that if women's interests relating to the provision of water and sanitation are at the centre of planning and implementation of programmes, this has a direct impact on women's life experience, their potential and opportunities. This study goes on to provide examples of the benefits to women when they themselves are involved in the planning, implementation and operation of water supply, sanitation and hygiene programmes.

Fisher, J 2006, 'For her it's the big issue: putting women at the centre of water supply, sanitation and hygiene: evidence report', Water Supply and Sanitation Collaborative Council, viewed 3 November 2016, <<https://dspace.lboro.ac.uk/dspace-jspui/handle/2134/9970>>.

Lack of basic sanitation and safe water is an acute problem for all who live in poor and overcrowded urban slums and rural areas of the developing world. For women and girls, it presents unique problems. Simply fetching water can place them at risk, while many have to wait until dark to relieve themselves, fearing harassment and sexual assault. In schools, dropout rates increase when access to safe water and separate toilets for boys and girls are unavailable. There is also a clear need for privacy and dignity in relation to menstruation, pregnancy and childbirth. Within the home, women typically bear the main responsibility for keeping their households supplied with water, caring for the sick, maintaining a hygienic domestic environment and bringing up healthy children. With such users' insight and specific needs to be taken into consideration, wouldn't it make sense to involve women in all planning, implementation and operations of WASH programmes? This report examines the crucial role women can and should play as key agents of change. This collection of evidence and illustrated examples of real projects

highlights the effect and benefits of placing women at the core of WASH programmes for the community as a whole .

Hartmann, M, Krishnan, S, Rowe, B, Hossain, A & Elledge, M 2015, 'Gender-responsive sanitation solutions in urban India', Report No. RB-0009-1502, Research Triangle Park, RTI Press, NC, viewed 18 October 2016, <www.rti.org/publication/gender-responsive-sanitation-solutions-urban-india>.

A growing body of evidence has begun to document the specific challenges women face when accessing and using sanitation facilities, and the resultant adverse impacts on their health, safety and productivity. This research brief summarises current evidence and identifies gaps in research on urban Indian women's sanitation-related needs and constraints. It focuses on women and girls' responses to (1) the design of sanitation systems, (2) the location of these systems, and (3) women's empowerment initiatives aimed at increasing new system implementation and adoption. It concludes by making the case for new research to improve our understanding of the association between gender and sanitation, support the development of gender-responsive designs, and evaluate the impacts of these designs on access, adoption and longer term outcomes, including health, safety, productivity and gender equity.

Jagori & Women in Cities International 2011, 'Gender and essential services in low-income communities: report on the findings of the action research project Women's Rights and Access to Water and Sanitation in Asian Cities', Women in Cities International, Montréal, QC, CA, and Jagori, New Delhi.

This report is the final publication resulting from the action research project on Women's Rights and Access to Water and Sanitation in Asian Cities (2009-2011). The objective was to test and adapt the women's safety audit methodology to generate a model for engaging poor women with their local governments and other partners, in order to begin to address the gender service gap in water and sanitation. It includes a literature review on inadequate infrastructure in low-income communities, an overview of Delhi's urban governance structure, policies on the provision of urban services, the gendered impacts of inadequate services and the consequences for women's safety, health, comfort and dignity.

Joshi, D, Fawcett, B & Mannan, F 2011, 'Health, hygiene and appropriate sanitation: experiences and perceptions of the urban poor', *Environment and Urbanization*, Vol. 23, No. 1, pp. 91-111.

'Don't teach us what is sanitation and hygiene.' This quote from Maqbul, a middle-aged male resident in Modher Basti, a slum in Dhaka city, summed up the frustration of many people living in urban poverty to ongoing sanitation and hygiene programmes. In the light of their experiences, such programmes provide 'inappropriate sanitation', or demand personal investments in situations of highly insecure tenure, and/or teach 'hygiene practices' that relate neither to local beliefs nor to the ground realities of a complex urban poverty. A three-year ethnographic study in Chittagong, Dhaka, Nairobi and Hyderabad illustrated that excreta disposal systems, packaged and delivered as low-cost 'safe sanitation', do not match the sanitation needs of a very diverse group of urban men, women and children. It is of little surprise that the delivered systems are neither appropriate nor used, and

are not sustained beyond the life of the projects. This mismatch, far more than an assumed lack of user demand for sanitation, contributes to the elusiveness of the goal of sanitation and health for all. The analysis indicates that unless and until the technical, financial and ethical discrepancies relating to sanitation for the urban poor are resolved, there is little reason to celebrate the recent global declaration on the human right to water and sanitation and health for all.

Khosla, R 2000, 'Women and sanitation: urban reality experiences of government programmes, NGOs and CBOs', *Social Change*, Vol. 30, Nos. 1-2, pp. 192-207.

Between 20 to 40 million persons in urban areas are without access to a toilet. Of these, two-thirds are women and children. High on the list of urgent priorities in urban poor communities are toilets, whose absence is known to exacerbate health and nutritional burden of the poor, and increase susceptibility to abuse. Municipal solutions to toilet needs are invariably big community toilet complexes. This paper discusses problems of big toilets versus smaller alternatives, building a case for household toilets and networking poor households/communities to city systems using examples from some best practices in the country. Sanitation needs require a whole city perspective with the objective of reaching all the poor in a city, especially the un-reached. No problem of sanitation can, however, be resolved without people's involvement. Urban Basic Services Program demonstrated a strategy for community organisation that enabled people to dialogue with city governments. Adopting the strategy under Primary Education Enhancement Project, women's associations are being armed with information to negotiate for their rights. People's participation ensures sustainable and cost-effective alternatives based on their life strategies. Some recommendations given here are aimed at addressing the challenge of urban sanitation in an effort at creating a sanitation *suraksha chakra* that envelops the entire city.

Ministry of Urban Development 2015, 'Women to be given priority under Swachh Bharat Mission', Press Information Bureau, Government of India, 26 February, viewed 14 February 2017, <<http://pib.nic.in/newsite/PrintRelease.aspx?relid=115915>>.

Women will be accorded priority under the Swachh Bharat Mission while constructing community and public toilets, according to this press release. One community seat per 25 women and one public community toilet seat per 50 women will be built under the Mission as against one seat per 35 and 100 men respectively.

Panda, GR & Agarwala, T 2012, 'Gender responsive budget analysis in water and sanitation services in the resettlement colonies of Delhi', viewed 7 November 2016, <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2119016>.

The paper attempts to study Gender Responsive Budgeting (GRB) in the field of urban water and sanitation in the Delhi region in order to ascertain the hypothesis that such budgeting and planning impacts the lives of women and girls disproportionately compared to men and boys. The study finds that various policies and schemes pertaining to urban water and sanitation in India can be categorised as 'gender blind' since these do not recognise the

gender-based disadvantages in accessing safe water supply and sanitation, sewerage and drainage. It is also observed that the overall budgetary allocation for water and sanitation in the resettlement colonies and for *jhuggi jhopri* (JJ) clusters (slums) is grossly inadequate and not in sync with the needs and effective level of service delivery. There is utter confusion and lack of effective collaboration and consultation among various implementing agencies. Finally, the paper finds that the attempt at bringing out a GRB in India has been a cosmetic exercise so far.

O'Reilly, K 2010, 'Combining sanitation and women's participation in water supply: an example from Rajasthan', *Development in Practice*, Vol. 20, No. 1, pp. 45-56.

Water supply and sanitation provision are key elements in progress towards the Millennium Development Goals (MDGs). Women's participation is considered integral to the sustainability of the projects created to meet these two MDGs. Bringing feminist and geographic critiques to bear on gendered approaches to improving sanitation coverage, the research used in this article indicates that latrine building and women's participation may be contradictory goals for sanitation projects, despite the fact that women are the target group for latrine-building interventions. The findings of the analysis suggest that attention must be given to latrine building as both a technical undertaking and a gendered political intervention.

Patel S & the SPARC Team 2015, 'The 20-year sanitation partnership of Mumbai and the Indian Alliance', *Environment and Urbanization*, Vol. 27, No. 1, pp. 55-72.

Mumbai is well known for the scale of the community toilet programme supported by local government, much of it undertaken in partnership with community-based organisations, including the National Slum Dwellers Federation, Mahila Milan (a federation of women's savings groups) and SPARC (a local NGO), together known as the Alliance. After describing how this community toilet programme developed over the last 20 years and sought city-wide scale, this paper focuses on the Alliance's co-development with the municipal corporation for a system to monitor conditions in the hundreds of community toilet blocks that have been built. This monitoring system supports government officials in each ward and the communities served by the toilet blocks in identifying and addressing faults. It also helps develop good working relationships between communities and wards and municipal officials, which can allow other key issues to be addressed.

Prabhakaran, P, Kar, K, Mehta, L, & Chowdhury, SR 2016, 'Impact of Community-led Total Sanitation on women's health in urban slums: a case study from Kalyani Municipality', *IDS Evidence Report No. 194, Institute for Development Studies, Brighton, UK.*

This Evidence Report seeks to understand the health and other impacts of slum women's access to sanitation through the Community-led Total Sanitation (CLTS) approach. It also examines the process through which open defecation free (ODF) status was attained in two different slum colonies, the resulting health impacts, and the collective action that took place around both sanitation and other development benefits. The study was conducted in the slums of Kalyani, a municipality town located 55 km north of Kolkata, the

capital city of West Bengal state in India. From an area plagued with rampant OD, the slums of Kalyani were transformed into the first ODF town in India in 2009. This was achieved through the CLTS model that focused on motivating the community to undertake collective behaviour change to achieve 'total' sanitation and an ODF environment. This was in sharp contrast to earlier, top-down approaches to the provision of toilets, which had failed to ensure ownership or usage by the community.

The benefits of CLTS to the community were not limited to changed sanitation behaviour and an end of OD - there were significant development and health gains beyond sanitation. Women's health in this study has been viewed not just in terms of the presence or absence of disease burden on the physical health of women but also in terms of their socio-psychological well-being resulting from reduced risks and a wide range of benefits accruing from better sanitation and hygiene practices and facilities. The study also focused on exploring the extent to which the CLTS process can be said to have empowered women. As experiences of good health and well-being are affected by factors in the external environment, namely the role of the local government, women's access to health services and the involvement of multiple sectors, these issues were also considered, in order to understand the overall health status and experiences of women in Kalyani slums.

Salve, P 2016, 'Swachh Bharat's urban-toilet plan is running 76% behind schedule', Scroll India, 29 April, viewed 17 February 2017, <<https://scroll.in/article/807261/swachh-bharats-urban-toilet-plan-is-running-76-behind-schedule>>.

India's ambitious toilet-construction programme - part of the [Swachh Bharat Mission](#) to make India ODF by 2019 - is slipping, according to government [data](#) submitted to the Lok Sabha, the lower house of Parliament. About 1.9 million toilets in urban areas are under construction, according to the government, but progress is slow. The article gives details of the construction data.

Sheikh, S 2008 'Public toilets in Delhi: an emphasis on the facilities for women in slum/resettlement areas', CCS Working Paper No. 192, Summer Research Internship Programme 2008, viewed 20 October 2016, <www.ccs.in/internship_papers/2008/Public-toilets-in-Delh-192.pdf>.

The aim of this research paper was not to do a survey of the public toilet facilities in slum and resettlement colonies of Delhi, but to understand the various issues concerned with public toilets for women in slum and resettlement areas of Delhi. While talking to women living in a few slum/resettlement areas in Delhi, queries relating to the facilities and the issue of gender disparity in the provision of these facilities were raised. In the absence of the facilities, what do women do to relieve themselves and where do they go? An attempt was also made to understand whether residents, especially women, really consider this as an issue which needs attention. If they do consider it a problem, have they have approached the relevant authorities and what was the response of the authorities? An effort was made to understand the politics of the issue, if any. If toilets do exist, are they paid or not and is there a difference between the charges for a woman as compared to those for a man? Finally, the paper sought to probe related issues such as sexual harassment.

Sommer, M, Kjellén, M & Pensulo, C 2013, 'Girls' and women's unmet needs for menstrual hygiene management (MHM): the interactions between MHM and sanitation systems in low-income countries', *Journal of Water Sanitation and Hygiene for Development*, Vol. 3, No. 3, pp. 283–297.

While the sanitation sector is gaining increased recognition in policy and research, its inherent inter-linkage with menstrual hygiene management remains an under-researched subject. This review explores knowledge about menstrual beliefs and behaviours, and how women and girls currently handle their monthly menses in relation to existing sanitation systems in low-income countries. It further explores how used menstrual materials are disposed of, and the consequences of different disposal practices for the functioning of sanitation systems. Conclusions point towards the inadequacy of research in the area of menstrual management. The lack of privacy and space for changing, cleaning, drying or discarding materials, as well as insufficient availability of water for personal hygiene stand out as important areas where sanitation systems often fail to cater to the needs of menstruating girls and women. Information on proper disposal of menstrual materials as well as the actual provision of disposal facilities are important for improving menstrual management and ensuring that absorption materials do not impair the functioning of sanitation systems. Training of sanitation system designers and planners with regard to menstrual management could lead to sanitation systems becoming more inclusive of the full needs of all people.

Water and Sanitation Program 2010, 'Gender in water and sanitation', Working Paper, November, WSP, viewed on 20 October 2016, <<https://www.wsp.org/sites/wsp.org/files/publications/WSP-gender-water-sanitation.pdf>>.

This paper briefly highlights approaches to redressing gender inequality in the water and sanitation sector. It is a working paper as the Water and Sanitation Program and its partners continue to explore and document emerging practices from the field. The review is intended for easy reference by sector ministries, donors, citizens, development banks, non-governmental organisations and water and sanitation service providers committed to mainstreaming gender in the sector.

Resettlement planning, gender and sanitation

Saini, S 2012, 'Necessity of community participation in the process of resettlement to improve WATSAN facilities: a study of Indian urban poor women of Madanpur Khadar', *International Journal of Research in Social Sciences*, Vol.2, No. 2, pp. 292–302.

The process of slum demolition in order to marginalise the poor has resulted in the eviction of India's largest urban population. Many poor families have been shipped out of the city, leading to increase in the hardships of the urban poor. They face the brunt of lack of proper water and sanitation facilities. In urban areas people belonging to the rich sections of the society can always access water and sanitation facilities; it is the poor who suffer due to the lack of these basic amenities. They spend quality time and a large portion of their monthly income in accessing them. The women are the main sufferers as their physical hardships and vulnerability to

problems increase with the absence of water and sanitation. Although various initiatives in the form of policies and programmes have been taken to provide these basic amenities, these have failed to achieve the desired goal. One of the reasons is the lack of community awareness and participation. The community should be involved from the very first step of programme planning as it gives them a sense of responsibility and ensures better success rate and sustainability. Moreover, the gender perspective of the problem needs to be understood as women suffer the most as a result of the problems arising due to lack of water and sanitation facilities.

Sikka, G. 2016, 'The case of missing toilets in Sardar Sarovar dam resettlements in Vadodara, Gujarat', *GeoJournal*, Vol. 81, No. 2, pp. 257-266.

Development projects bring tremendous changes in patterns of use of land, water and other natural resources, which leads to a range of resettlement effects. This process of economic and social dislocation most often exacerbates existing gender disparities and inequalities in affected areas. When gender differences are overlooked in the project-planning phase, projects are unlikely to respond to women's needs and may even have negative consequences. In this present study, it was found that while planning resettlement sites for the families affected by the Sardar Sarovar dam, the necessity of having toilets was completely ignored. This research note provides empirical evidence to voice the case of gender inequality prevalent in access to basic amenities in Sardar Sarovar resettlements in Vadodara, Gujarat. The study also calls for the inclusion of gender issues and social equity in assessment, design and implementation; monitoring must be made a compulsory element for large-scale development projects like dams.

Design of sanitation systems and toilets

Anon 2016, 'Kerala railway stations to get women-friendly toilets', *Indian Express*, 27 October, viewed 12 February 2017, <www.newindianexpress.com/cities/thiruvananthapuram/2016/oct/27/she-toilets-at-rly-stations-1532254.html>.

The article discusses the installation of 10 new women friendly 'she-toilets' at railway stations by the Kerala State Women's Development Corporation under the Department of Social Justice.

Anzilotti, E 2017, 'Mumbai's new eco-friendly, women-only restroom', *Citylab*, 2 September, viewed 10 February 2017, <www.citylab.com/navigator/2016/09/a-women-only-toilet-in-the-middle-of-a-street-in-india/498554/>.

Mumbai has a toilet shortage. Only 10,381 public toilets exist to meet the needs of the city's 12 million people, and for women the situation is even more grim: only 36 per cent of those toilets are reserved specifically for their use. The article talks about a solution being tested out by the sanitation advocacy group Agasti in Thane, just northwest of the city centre: an all-women's restroom, situated along a central thoroughfare close to the local bus terminal. Arranged around the base of a tree, the cluster of four private toilets resembles a well-lit, pink-tinged shipping container from the outside. Inside, it is clean and calm. In the communal

sitting area, women rest on benches and chat under the shade created by overhanging leaves.

Josephine, S 2012, 'Renovated IWSCs gain clean patronage', *The Hindu*, 7 August, viewed 12 February 2017, <www.thehindu.com/todays-paper/tp-national/tp-tamilnadu/renovated-iwscs-gain-clean-patronage/article3736795.ece>.

The piece discusses the renovated Integrated Women Sanitary Complexes (IWSCs) in Tamil Nadu that have started gaining patronage from rural women in several villages, helping them take a step towards eradicating OD and promoting hygiene in the villages. With the renovation works completed, the IWSCs were operational now, according to officials of the Department of Rural Development and Panchayat Raj. The complexes, which were constructed nearly ten years ago, were left in a state of neglect for the last few years. The AIADMK government, on assuming power, decided to renovate the IWSCs and works were taken up under the Rural Building Maintenance Renovation Scheme 2011-2012, officials said.

Kwiringira, J, Atekyereza, P, Niwagaba, C & Günther, I 2014 'Gender variations in access, choice to use and cleaning of shared latrines: experiences from Kampala Slums, Uganda', *BMC Public Health*, Vol. 14, 1180, DOI: 10.1186/1471-2458-14-1180.

Sanitation is one of the most intimate issues that affect women, especially in slums of developing countries. There are few studies that have paid attention to the gender variations in access, choice to use and cleaning of shared latrines in slums. This paper draws on qualitative data from a cross-sectional study conducted between 2012 and 2013 in six slums of Kampala City, Uganda. The study involved both women and men. Data was collected from 12 Focus Group Discussions (FGDs), 15 Key informant interviews, community transects and photographs of shared latrines.

Location of a shared latrine facility, distance, filthy, narrow and irregular paths, the time when a facility is visited (day or night), privacy and steep inclines were gender 'filters' to accessing shared latrines. A full latrine pit was more likely to inhibit access to and choice of a facility for women than men. Results indicate that the available coping mechanisms turned out to be gendered, with fewer options available for women than men. On the whole, women sought more privacy, easy reach, self-respect and esteem, cleanliness and privacy than men. While men like women also wanted clean facilities for use, they (men) were not keen on cleaning these facilities. The cleaning of shared latrines was seen by both women and men as a role for women.

The presence of sanitation facilities as the first step in the access, choice, use and cleaning by both women and men has distinct motivations and limitations along gender lines. The study confirms that the use and cleaning of latrines is regulated by gender in daily living. For women, the use of a latrine meant much more than relieving oneself: it involved security, intimacy and health concerns.

Massey, K 2011, *Insecurity and Shame: Exploration of the Impact of the Lack of Sanitation on Women in the Slums of Kampala, Uganda*, WaterAid, London.

For women in the urban slums of Kampala, interventions aimed at providing adequate sanitation must not only provide facilities; they must also ensure the toilets can be used in a way that allows women to maintain their privacy and security, taking into consideration the demands of the community and the culture. The findings of this study raise the question of whether or not the provision of public latrines is a good solution for women living in unsafe urban slum communities. Inadequate sanitation can put women at risk of violence and harassment, and importantly, it contributes to an overall sense of insecurity and of shame experienced on a daily basis, with implications for the use of existing facilities. The gravity of this issue demands increased attention and action as a vital element of the global effort to provide sanitation for all.

Simiyu, S, 2015, 'Determinants of usage of communal sanitation facilities in informal settlements of Kisumu, Kenya', *Environment and Urbanization*, Vol. 28, No. 1, April, pp. 241-258.

Residents of informal settlements in developing countries are faced with various challenges, including a lack of household sanitation facilities, which leads to use of alternative methods such as OD. The lack of household sanitation facilities and consequent use of improper methods necessitated the introduction of communal sanitation facilities in informal settlements as a way of increasing access to and use of sanitation facilities. However, little is known about their use and effectiveness, particularly in Africa's informal settlements. This study used a number of quantitative and qualitative methods to assess determinants of use of communal sanitation facilities in the informal settlements of Kisumu, a city in Kenya. Findings reveal that factors such as location/siting, inadequate maintenance, economic aspects and gender issues influence the use of communal facilities, and they should therefore be included in future sanitation interventions.

New methods for achieving gender equality and sanitation outcomes

Carrard, N, Crawford, J, Halcrow, G, Rowland, C & Willetts, J 2013, 'A framework for exploring gender equality outcomes from WASH programmes', *Waterlines: International Journal of Water, Sanitation and Waste*, Vol. 32, No. 4, pp. 315-333.

This paper aims to assist practitioners and researchers in planning, identifying and documenting gender outcomes associated with WASH programmes by proposing a conceptual framework for classifying gender equality changes. Gender outcomes that have been attributed to WASH initiatives encompass those directly related to improved services as well as outcomes that move into areas of relationships, power and status. There is a growing body of literature identifying WASH-related gender outcomes; however, the types of outcomes described vary considerably and further work is needed to form a comprehensive picture of WASH and gender links. The framework proposed in this paper is based on a synthesis of outcomes reported in WASH literature to date, empirical research in Fiji and Vanuatu, and insights from gender and development literature. It is hoped that the framework will support practitioners to engage with the inherent complexity of gender inquiry,

contributing to sector knowledge about the potential for WASH initiatives to advance gender equality.

Willetts, J, Carrard, N, Crawford, J, Rowland, C & Halcrow, G 2013, 'Working from strengths to assess changes in gender equality', *Development in Practice*, Vol. 23, No. 8, pp. 991-1006.

This paper describes an empirical application of a strengths-based approach to assess changes in gender equality, and draws out implications for research, evaluation and wider development practice. It outlines the constituents of a strengths-based approach and presents a case study where a participatory methodology informed by appreciative inquiry was used to investigate gender outcomes of two WASH-focused development initiatives. It considers the value and limitations of taking an explicitly strengths-based approach to assessing gender outcomes, and also proposes that there are important arguments for why such an approach might be usefully applied in addressing (and not just assessing) gender equality.